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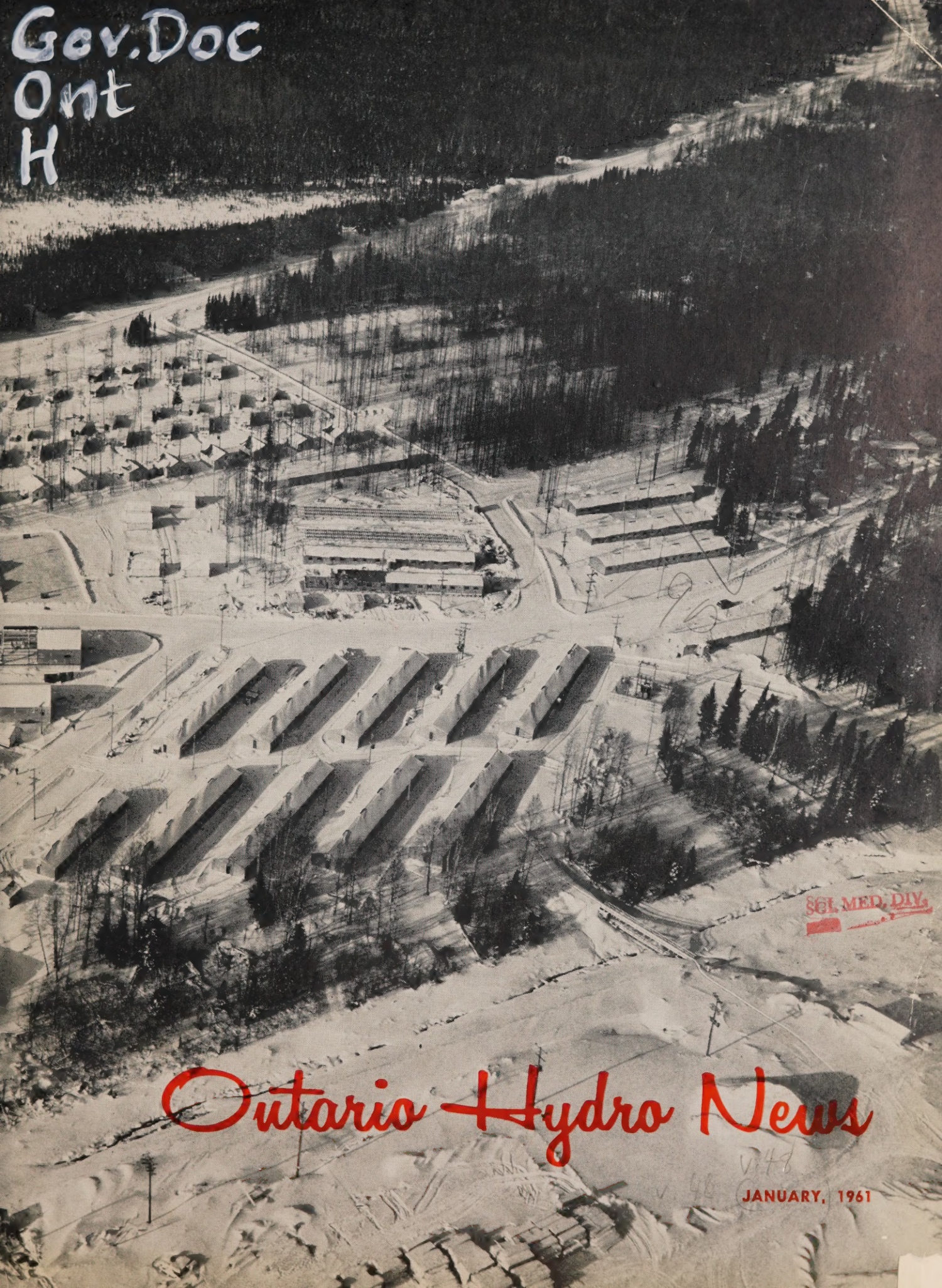
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# Ontario Hydro News

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# ONTARIO HYDRO NEWS

JANUARY, 1961 VOL. 48, NO. 1

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## COVER PHOTOGRAPH

ON the Mattagami River, some 450 air miles north of Toronto, Ontario Hydro construction forces have created a new community (shown on this month's cover), which now boasts a population of some 650 and such modern amenities as a supermarket. This oasis in the northern wilderness is known as Little Long, where engineering plans are being translated into reality at the first of three Mattagami River hydro-electric sites to be developed in the next few years. Little Long, with two units in service by 1963, will have an estimated capacity of 114,000 kilowatts.

# Power for Ontario

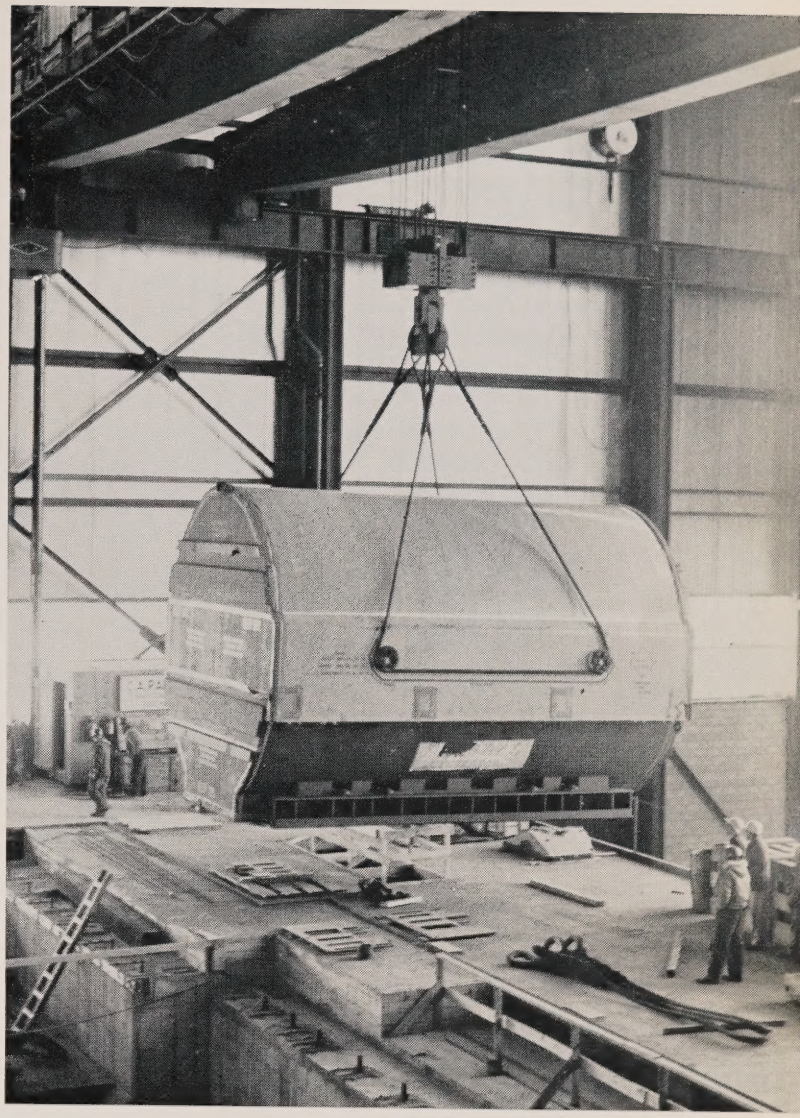
*(Toronto Globe and Mail, Dec. 13, 1960)*

THE Minister of Energy Resources, Hon. Robert Macaulay, produced some dramatic figures when he reported, in the Provincial Legislature last week, on the operations of Ontario Hydro. He showed that Ontario is producing and consuming three times as much electricity as it produced and consumed at the peak of the Second World War. Production and consumption will increase a further 50 per cent by 1965.

This reflects the fact that Ontario's living standards are among the highest in the world—and are still going up. The average city-dweller in this Province consumed 2,168 kilowatt-hours of electrical energy for household purposes in 1943; last year, the figure more than doubled to 5,474 kilowatt-hours. This is higher than the average for any other part of Canada; it is higher by far than the average for the United States; it is three times greater than the figure for Britain, and four times greater than the figure for France.

Rural consumption of electricity suggests that the farmer is not so poor as he is sometimes made out to be; his array of electrically operated devices is such that, last year, for the first time, he used more power than the city-dweller—an average of 5,718 kilowatt-hours against one of 5,474. This power comes to the farmer at the exceedingly moderate price of 2.01 cents per kilowatt-hour, one of the lowest prices in the world, and less than is paid by most of the people living in the great cities of the United States. Since 1943, the Ontario farmer has seen the cost of his power (per kilowatt-hour) decrease by 18.3 per cent; the cost of power to city-dwellers has decreased by 7.4 per cent. Meanwhile, the cost of living generally has risen by close to 100 per cent.

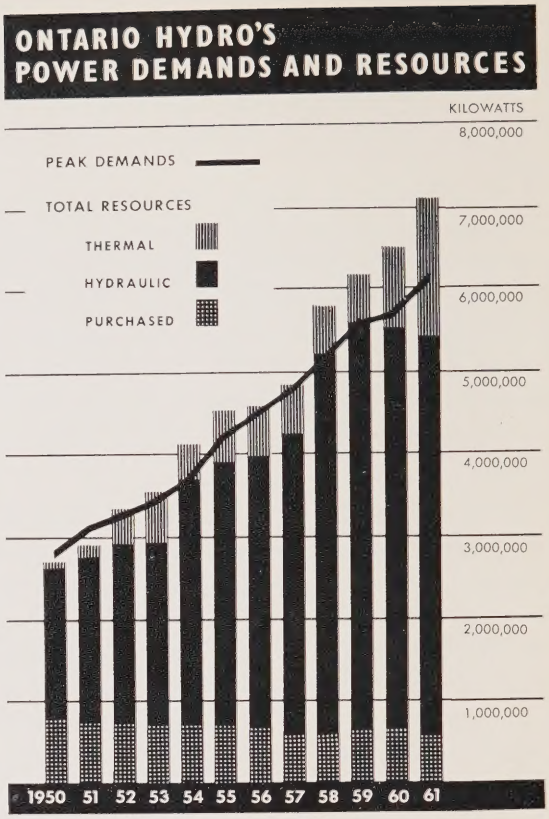
These figures are a tribute to the ability and far-sightedness of the men who have managed the Ontario Hydro since the war. In a period of unprecedented demand, they have kept the Province supplied with the cheap power, which is, perhaps, its greatest resource; more than this, they have made the cheap power still cheaper. In this accomplishment, both the Ontario Hydro and the Ontario Government may take a full measure of pride. ■



# Big Package

A 170-TON stator inner core of an electrical generator—reportedly the heaviest single piece of equipment ever transported by railway in Canada—arrived early in December at Ontario Hydro's Lakeview station, just west of Toronto. Only a matter of twenty-four hours earlier, the 75-ton outer casing (shown above), which is 22 feet long with a diameter of 16 feet, reached the plant. These pieces comprise part of the equipment associated with the installation of the first 300,000-kilowatt unit at the Lakeview Station. This unit is scheduled to come into service in 1961. When completed in the mid-sixties, the $250 million Lakeview project will have a capacity of 1,800,000 kilowatts. ■

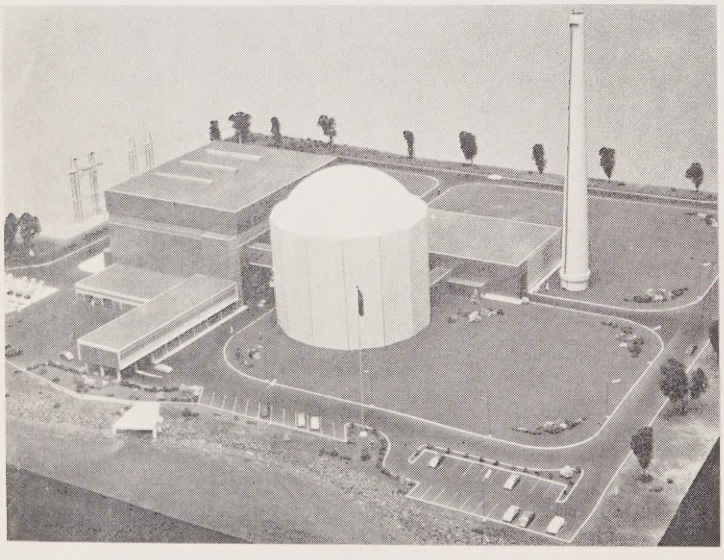
ONTARIO'S appetite for power has more than doubled electrical demands on Hydro systems in the last 10 years.



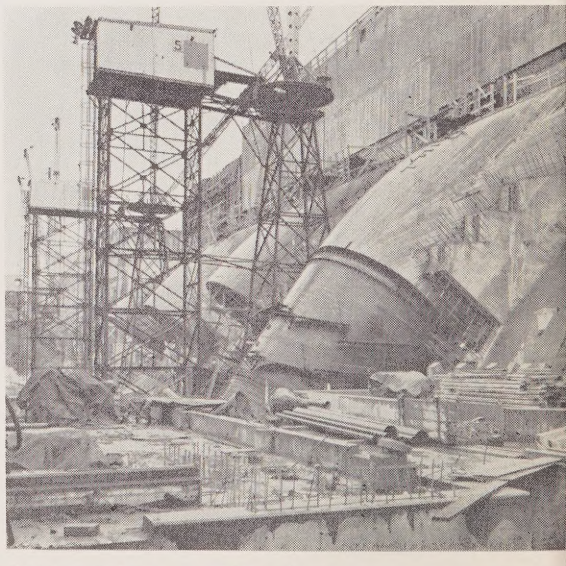

EFFECTIVE CO-OPERATION between municipal and Ontario Hydro crews was a major factor in the successive power emergencies which followed ice storms in Southern Ontario last January.



# 1960 in review



PRELIMINARY CONSTRUCTION was started at the Douglas Point Nuclear Power Station on Lake Huron.



CONSTRUCTION PASSED the half-way mark at Otter Rapids, a new hydro-electric development on the Abitibi River

REFLECTING general economic conditions, Ontario Hydro's peak power requirements in 1960 increased by approximately 3.5 per cent over the previous year compared with the long-term average of 6.5 per cent. In 1959 the comparable increase was 8.1 per cent.

While the rate of growth for the past 12 months was below the long-term average, a number of favorable economic factors suggest the latter part of 1961 will see an upturn in economic activity, with a parallel increase in power requirements.

(The accompanying graph of power demands and resources since 1950 includes a projection to the end of 1961.)

A continuing problem facing Ontario Hydro is to maintain rates at a low level. In general, the Commission and the municipal utilities have been successful in offsetting rising costs by increasing consumption during periods of relatively low power demands. This diversification results in greater use of power facilities over the year, keeping costs down.

Here are the highlights of Ontario Hydro's 1960 operations:

- 420,000 kilowatts of new generating capacity were placed in service, raising total resources to 6,500,000 kilowatts. Peak demands exceeded 5,700,000 kilowatts. For the first time in recent years, Hydro was able to maintain an adequate reserve of power (see graph).

- Electric energy supplied totalled 32.7 billion kilowatt-hours, an increase of four per cent over 1959. This represents the use of electricity over the entire year—as opposed to peak demands during periods of maximum use—and reflects the success of efforts to diversify consumption.

- Work started on a power development program in Northern Ontario which includes construction of three hydro-electric plants north of Kapuskasing and North America's first major 460,000-volt extra-high-voltage transmission line.

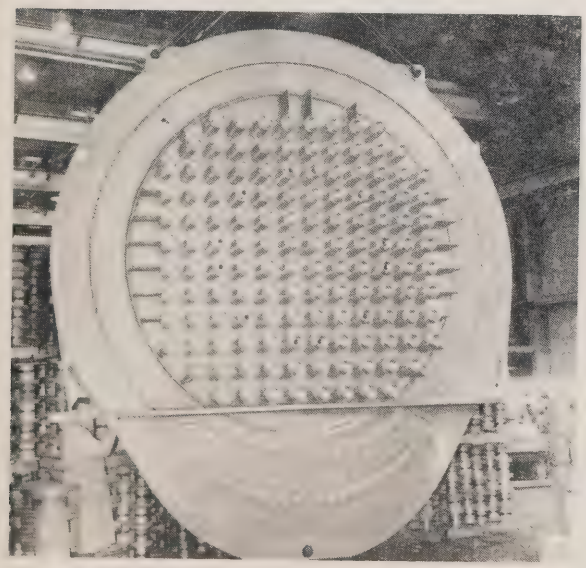
- More than 20,000 new rural, farm, summer cottage, and hamlet customers were supplied with electrical service. At the end of the year, nearly 500,000 customers were being served by Hydro's rural systems. Electric power is available to 95 per cent of the farms in Ontario.

During 1960 the total number of customers served by Ontario Hydro and the municipal utilities increased almost three per cent to more than 1,880,000. A total of 116 miles of transmission line and nearly 700 miles of rural distribution line were added to Hydro's expanding systems. To maintain a high standard of service to customers, new Hydro rural offices were opened in Dundas, Guelph, Cobourg, Kenora and Essex.

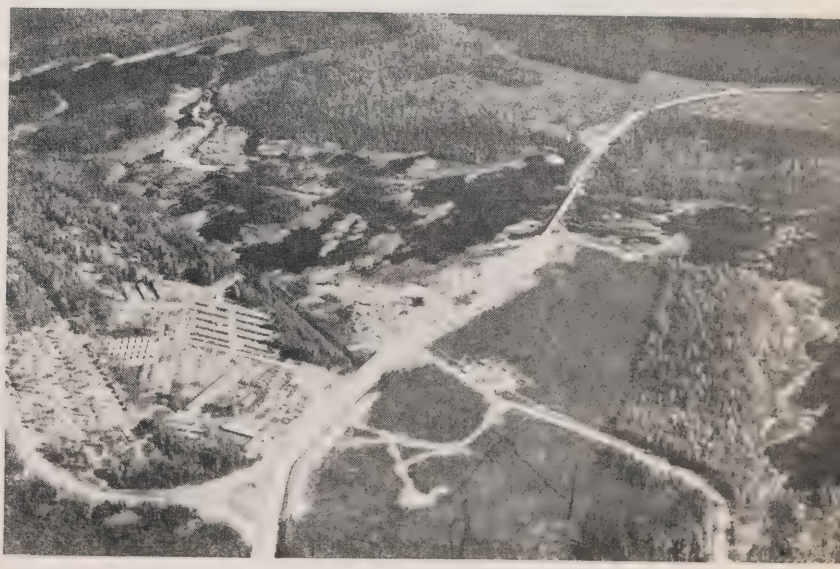
In June, the final link was completed in a new electronic data processing system designed to provide faster and improved billing service to customers supplied directly by Ontario Hydro. The system links Hydro's nine regional and 100 rural offices over a 250,000-square-mile operating area to Head Office in Toronto.

Electrical consumption in Ontario continued to grow at a steady pace. Estimated annual average consumption by residential custom-

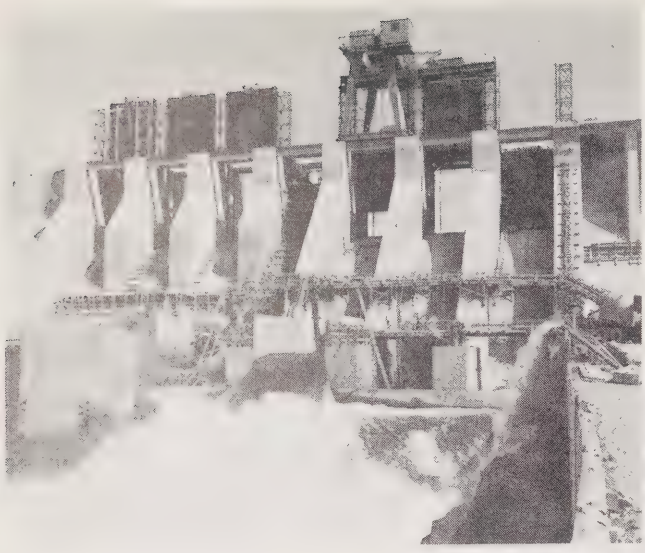
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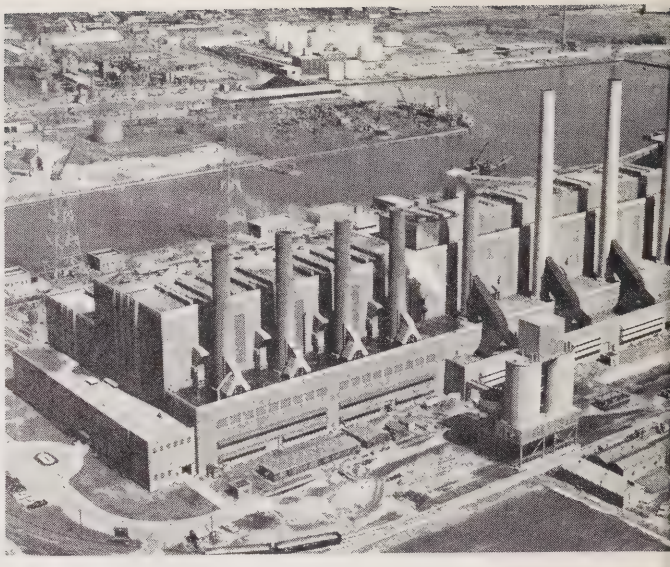
INSIDE WELL WALL of the reactor installed at the Nuclear Power Demonstration plant near Rolphton on the Ottawa River.



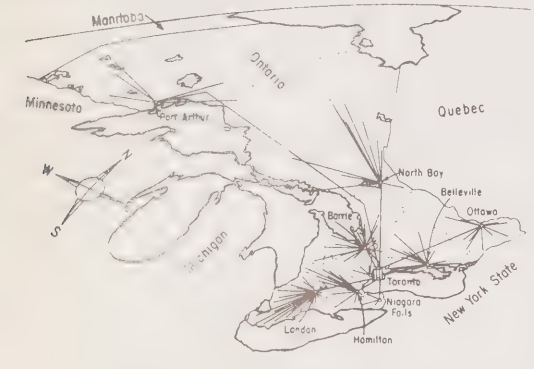
AERIAL VIEW of Hydro's Little Long site, one of three new Mattagami River plants scheduled for completion in the next few years.



LOCATED on the Mississagi River near Thessalon, the 40,000 Kilowatt Red Rock Falls G.S. was placed in initial service in 1960.



SCHEDULED for completion this spring, work continued on the addition of four, 200,000-kw. units at the Richard L. Hearn station in Toronto.




MAP OF ONTARIO shows network of lines employed to transmit data from Hydro's regional and area offices to H.O. in Toronto.

ers reached 5,650 kilowatt-hours, three per cent higher than 1959 and an increase of 60 per cent during the past decade.

An active sales campaign was maintained through the "Live Better Electrically" program. Electric home heating continued to gain in popularity, with the number of residential installations completed or under way at the end of 1960 reaching 1,000, double the figure for 1959. More than 200 installations had been made by commercial and industrial customers by the end of the year.

Despite the steady growth of the Ontario Hydro systems, the total number of Hydro employees actually declined during the year. Staff averaged approximately 15,200 during 1960, compared with 15,866 in 1959 and 17,701 in 1958.

Capital expenditures during 1960 amounted to more than $142,000,000, raising Hydro's total assets to approximately $2.7 billion, with a long-term debt of $1.8 billion. Bond issues totalled $100 million, compared with $125 million in 1959.

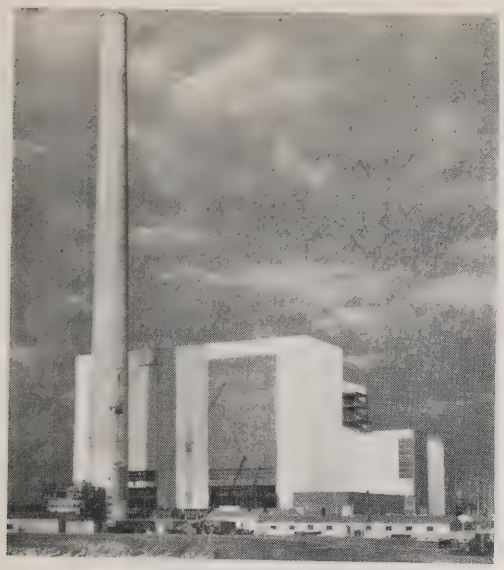
To keep pace with the anticipated long-term increase in power demands, construction was under way or planned at the end of the year for 10 power developments to provide 2,300,000 kilowatts. These projects will boost Hydro's resources by nearly one-third by 1966.

Two nuclear power stations, which will use uranium as a fuel to produce electricity, are under way. Nuclear Power Demonstration (NPD), a 20,000-kilowatt development near Chalk River, is scheduled to begin preliminary operation in the middle of the year. Atomic Energy of Canada Limited has begun construction of a 200,000-kilowatt nuclear power plant at Douglas Point, midway between Port Elgin and Kincardine on Lake Huron. This project, Canada's first full-scale nuclear station, is scheduled to deliver power into Hydro's Southern Ontario System in 1964.

### Thermal Plants

Coal-burning thermal stations represent the largest part of new generation scheduled for service during the next few years. The last of four new 200,000-kilowatt units at the Richard L. Hearn station in Toronto will be completed by the spring of 1961. Just west of Toronto, the giant Lakeview Generating Station—designed for an eventual capacity of 1,800,000 kilowatts — will deliver power from its first 300,000-kilowatt unit later this year. In Northwestern Ontario, the Thunder Bay thermal-electric plant at Fort William is also scheduled for service later this year with a capacity of 100,000 kilowatts.

Despite present and forecast construction of thermal projects, hydro-electric power retains an im-



BY THE MID-SIXTIES, the new Lakeview thermal-electric plant west of Toronto will have a capacity of 1,800,000 kilowatts in six units.

portant role in Hydro's expanding systems.

On the Mississagi River 50 miles east of Sault Ste. Marie, the initial 20,000-kilowatt unit at the new Red Rock Falls power development produced first power last November. The second unit is scheduled for service this month.

A major part of a $220 million construction program on the James Bay watershed is Ontario's first extra-high-voltage (EHV) transmission line. The EHV system will carry power from four new hydro-electric developments on the Abitibi and Mattagami Rivers to heavily-populated areas in the south. Two of these plants are now under construction at Otter Rapids on the Abitibi and Little Long on the Mattagami. The remaining two will be completed by 1966. The combined capacity of the four stations will be 528,000 kilowatts.

Construction of the EHV line is scheduled to start before the end of the year. Hydro engineers expect it may eventually reach as far south as Toronto. Its first stage will be built to Sudbury. ■

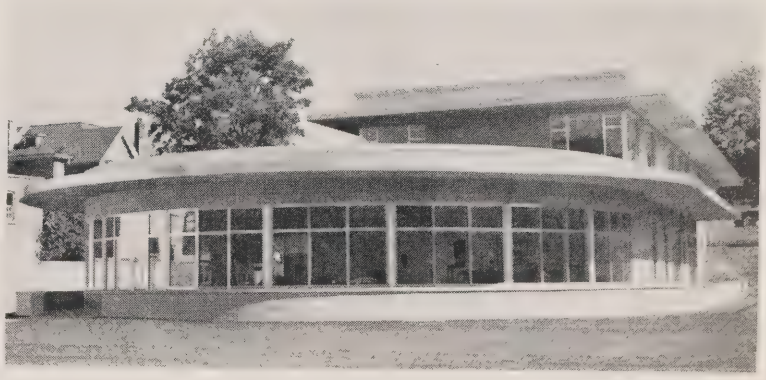
POWERHOUSE STRUCTURE of Hydro's Thunder Bay thermal-electric plant at Fort William approximates the height of an eleven-storey building.



ESSEX AREA OFFICE was one of five new Hydro rural offices opened in 1960 to maintain a high standard of customer service.



NEW HEADQUARTERS BUILDING of Stratford P.U.C., which was completed during 1960, is typical of the expansion of municipal Hydro systems.



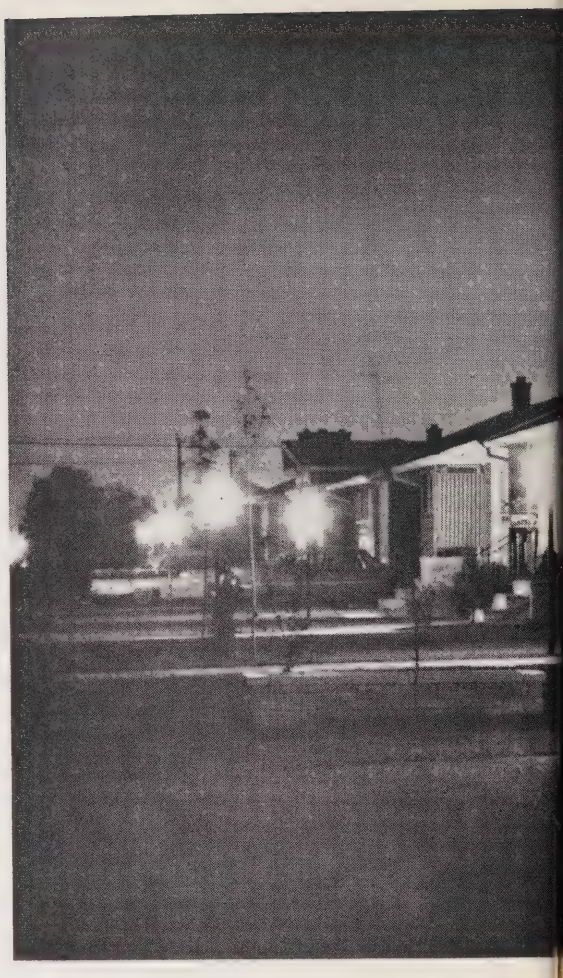
FORT WILLIAM Hydro Commission also opened a new office building in a downtown section of the progressive Lakehead city.



* by David H. Pope, P.Eng.

**Sandwich West Hydro System joins hands with contractors to help township residents live brighter electrically**

# SHINING SUBURB



A NEW "do-it-yourself" idea is sweeping the Township of Sandwich West and making it a brighter place to live.

Spurred on by an active promotion program, sponsored by the Sandwich West Hydro System, and a door-to-door direct sales campaign by local electrical contractors, home-owners in this booming Windsor suburb are showing enthusiasm for individually-owned lawn lights as a substitute for residential street lighting. More than 500, each with its own photo-electric control, have been installed since the drive began in mid-summer of 1960, and the local utility believes that this is just the beginning.

The idea of having each home-owner provide his own street lighting came to the Sandwich West Hydro early last year. As late as 1958, this sprawling community of 26,000 people received its night illumination from one lone street light, and was probably the only municipality where the utility had an easy solution to the problem of group versus individual lamp replacement – they were one and the same thing.

Furthermore, the residents were distinctly lukewarm toward overhead street lights, particularly on residential streets, and many were outspoken in their opposition to them. Every now and then a petition for street lights would be circulated in a particular area, but the success in obtaining signatures was so limited that none of these petitions even reached Council.

What did reach the Council, however, was a steadily growing demand for lights at street intersections and near schools and churches. Council listened, and, in 1959, approved an accelerated program of placing modern fluorescent street lights at key locations. But the problem of what to do about residential streets remained, and no quick and easy solution seemed apparent.

### Gas Lights Discounted

Then two things happened, one close to home, the other many miles away. Close to home the local natural gas company started beating its drums about a new



MORE THAN 500 Sandwich West homeowners have installed lawn lights since the township's Hydro System started its campaign.



LOCAL RESIDENTS have indicated a definite preference for lawn lights, with individual photo-electric control, in place of conventional overhead street lights.

type of outdoor gas light, reminiscent of the old style of gas street light, but on a smaller scale and designed for individual home ownership. Nobody at the Sandwich West Hydro office paid much attention. The lights were expensive to install, and operating costs ran anywhere from 5 to 10 times that of a regular incandescent lamp. Granted a few nostalgic people might buy them, and, perhaps, the odd one would be sold because a home-owner wanted something different, but, as a source of light, the gadget was completely discounted.

Discounted, that is, by Hydro representatives—not by the public. Every week saw a few more of these flickering flames on front lawns. Many people, long conditioned by advertising that "gas is cheaper," were installing gas lamps firmly believing this to be the cheapest way to light their property.

Far from home something else happened. In Cedar Hills, a suburb of Cedar Rapids, Iowa, the Iowa Electric Light and Power Company was handed a knotty problem. A large subdivider had refused the utility permission to place poles and street lights throughout his subdivisions. "I want lights," he said, "but no poles and wires are going to be stuck up on the streets around here."

The only solution Iowa Electric could see was to try and induce home-owners to install post lanterns, and, not very hopefully, they started on a door-to-door campaign selling a standard unit with photo-electric control for dusk-to-dawn operation. The response astounded them. In one small area alone they sold 225 lights, gaining almost 100 per cent saturation. The results were so spectacular that the sales program was extended successfully to other suburban areas supplied by the utility.

### Sales Campaign

This was all the Sandwich West Hydro System needed. With the blessings of the township council, the utility got rolling with an intensive promotion campaign consisting of newspaper advertising,

*(Continued on page 8)*



AS PART of its intensive sales promotion drive, the Sandwich West utility set up an attractive display of lawn lights in the lobby of the utility's new headquarters.

direct mail and bill stuffers. Several favorable news items appeared in the *Windsor Daily Star*, and before long township residents were aware of two facts. First, the cost of operating a lawn light all night every night is less than 20c a month; secondly, lawn lights with individual photo-electric control are the best answer to attractive residential street lighting at minimum cost.

The sales program itself was a model of co-operation between the utility and local electrical contractors. Firm prices were established for complete installations, and the Sandwich West Hydro System undertook the job of overall promotion and financing installations over a two-year period. The contractors were responsible for following up inquiries received at the Hydro office, making the sale and, finally, supplying and installing the lights. An attractive display was featured in the utility's lobby, and orders placed directly at the Hydro office were allocated to those contractors who were scratching hardest for business on their own.

And so, for the first time, a number of contractors found themselves knocking on doors, paying for newspaper advertisements, arranging displays and generally going aggressively after business. In a period of less than four months, better than 500 lights were installed. The utility even received a number of calls asking if gas lights could be converted to electric operation. (The answer, incidentally, was *no*.)

Winter and frozen ground have halted the campaign for the time being. But, come spring, the drive will start again as the Sandwich West Hydro and independent electrical contractors join hands to have their customers live brighter —electrically. ■

## *ABOUT THE AUTHOR



Electrical engineer, writer and sales promotion enthusiast. That could be a partial description of the accomplishments of 34-year-old David H. Pope, the author of this article.

Mr. Pope is mainly concerned, however, with the operations of Sandwich West Hydro System, where he holds the responsible position of Manager and Secretary.

A Torontonian by birth, Dave graduated from the University of Toronto in 1949. His university career followed a three-year stint with the Royal Canadian Artillery.

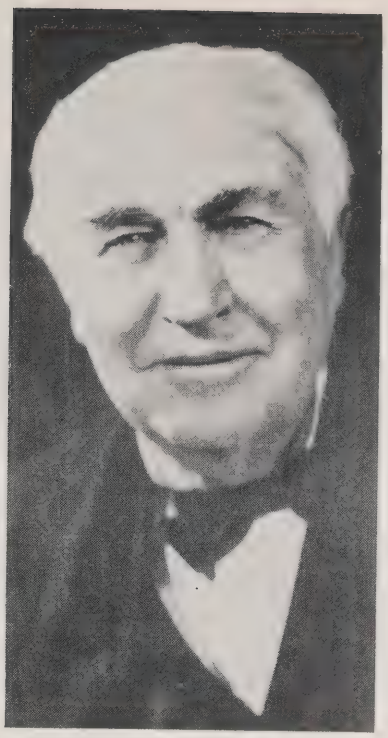
He is no stranger in Ontario Hydro circles either. As an engineering student in 1948, he spent the summer vacation working for Ontario Hydro's Wallaceburg Area. Then, on graduation, he joined the Commission's permanent staff as a consumer service supervisor in the Western Region. In 1955 he became an area supervisor with London Area, but a year later, with the formation of the Sandwich West Hydro System, he was appointed to his present position.

Indicative of his broad interests, is the fact that he was, at one time, a part-owner of a weekly newspaper, and even yet he makes periodic explorations into the field of writing. In fact, he modestly reports that he has "a small but distinctive collection of rejection slips from several magazines." Chess and badminton are other leisure-time pursuits of this youthful looking utility executive.

The Pope household, which includes David, his wife, Joan, and three daughters, aged 10, 6 and 3, came into some local prominence lately when Mrs. Pope was elected to the Sandwich West School Board, heading the polls with the largest majority ever given to any school board candidate in the history of the township. Naturally, as Dave reports, "I'm just a bit proud of her." ■

He led no armies into battle,
yet he wielded more power
than the world's greatest warriors

# The Miracles of EDISON



By Gordon Murphy

HISTORY has left many questions unanswered. Perhaps one of the most intriguing is whether Hoang-ti, the mythical founder of the Chinese Empire did, in fact, construct the first magnetic compass in 2634 B.C. — or, whether the device was not invented until 1110 B.C. by Ki-tan, a Chinese minister of state.

Scholars may argue about these facts for more centuries to come—along with other questions. Possibly they will debate the point that Thales, one of the Seven Wise Men of ancient Greece, was the first to observe the electrical properties of amber—but there can be no doubt that the birth of Thomas Alva Edison on February 11, 1847 —more than 2,400 years after Thales—was an event of universal significance in the history of electricity.

National Electrical Week this year commemorates the birth of Thomas A. Edison and, in doing so, pays tribute to the memory of a man whose epochal achievements have benefitted every human being throughout the world. It is said of Edison that when asked about his interests, he replied "Everything." To the question of where evidence of his work can be seen today, the answer could well be an e q u a l l y all-embracing "Everywhere."

The history of the Edison family, dating from the arrival in America of John Edison about 1730, is almost as politically turbulent as great-grandson Thomas Alva's was destined to be inventive. Journeying from Holland, the family settled originally at Elizabethport, New Jersey. Politics was the ruling passion of the times, and, when the Revolutionary War came, John Edison remained a L o y a l i s t — an allegiance that brought him imprisonment and near execution. His loyalty to the British cause resulted ultimately in the confiscation of his property and the migration of the family to Nova Scotia.

From Nova Scotia, the family moved to Vienna, Ontario, just in time for the War of 1812-1814. Captain Samuel Edison, the grandfather of the inventor-to-be, served with the British forces during the hostilities.

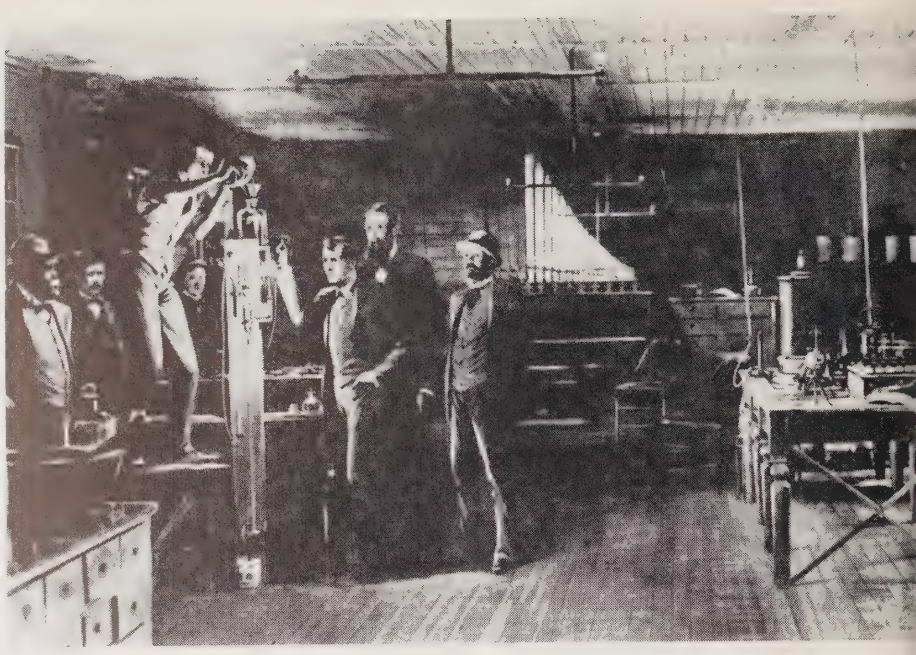
It was in Ontario that Thomas Alva's father, also named Samuel, married Nancy Elliot, a school teacher. Tranquility was not for the younger Samuel, however—at least, not in the political sense—for he was soon involved in the Papineau - MacKenzie Rebellion. Failure of the movement forced him to flee across the border to the United States, where he settled in Milan, Ohio. The brick cottage in which Thomas Alva Edison was born still stands.

The birth of Thomas Edison appears to have signalled the end of the more demonstrative of the Edison family's political activities. It was evident from the beginning, however, that the energy and adventurous spirit of his forebears had been transmitted to young

*(Continued on page 10)*

Edison in the form of an insatiable curiosity. Always intent on finding out things for himself, he was one of the original "do it yourselfers." At a tender age he made an understandably unsuccessful attempt to solve the mystery of hatching eggs by sitting on them himself.

When Edison was seven years old, his family moved to Port Huron, Michigan, where Thomas received all three months of his formal schooling. Seeing that his teacher did not have the patience to cope with the boy's active and inquisitive mind, Edison's mother withdrew him from school, and, calling on her early training, took over the task of his education herself.



PREPARING the first successful incandescent lamp for its life test at Menlo Park, N.J. on October 19, 1879. Thomas Edison is driving occluded gases from filament with battery current.

### In Business at 12

Although his mother's efforts doubtless did much toward shaping his future, most of Edison's knowledge was acquired through independent study and experimentation. When 11 years old, he set up a laboratory in the cellar of his Port Huron home, and was reading such books as the "Dictionary of Sciences." At twelve, he went into business, and was soon earning several dollars a day as a newsboy and candy "butcher" on the Grand Trunk Railroad train running between Port Huron and Detroit.

Always one to combine business with pleasure—experimenting being the pleasure—he set up a chemical laboratory in the train's baggage car, and also requisitioned space for a printing press, on which he ran off copies of "The Weekly Herald," the first newspaper ever edited, published and printed aboard a moving train.

The newspaper prospered, but the end came for the travelling laboratory when one of young Edison's experiments caused a fire in the baggage car. The trainman who discovered the blaze boxed Edison's ears severely, an incident which gave rise to a story that this was the cause of the inventor's later deafness. Edison, himself, never believed this. He attributed the deafness to a later occasion, when another trainman lifted him up by the ears to help him aboard a train as it was pulling out of a station.

Edison's railroading career reached a dramatic climax—and it might be said that world progress reached a turning point—when the inventor risked his life to save the little son of the Mount Clemens, Michigan, station agent from death under a moving freight train. The child's father taught Edison telegraphy as a reward. Telegraphy whetted Edison's interest in electricity, and took him into studies and experiments which were to result in some of the world's greatest inventions.

### Ontario Job

Edison's quickly-acquired skill as a telegrapher won him a regular job on the Grand Trunk Railway at Stratford Junction, Ontario, when he was only seventeen. His inventive genius backfired on him on this job, however, when a supervisor came across one of his creations—a device for automatically "reporting in" on the wire in Morse Code every hour while the budding inventor was catching up on sleep sacrificed to his studies and experiments.

Edison spent the next several years as a telegrapher at various points in mid-west United States, working all the time to improve the crude telegraph apparatus of the era.

After moving to Boston in 1858, he took out his first patent, an electrical vote recorder. Despite the fact that the principle involved is now in general use, Edison discovered that the world was not then ready for his vote recorder. The discovery, he said later, taught him wisdom. He would never again invent anything unless he was sure it was wanted.

Moving to New York, Edison did invent something that was wanted: the stock ticker—the sale of which brought him $40,000, his first earnings as an inventor, and enabled him to open an electrical manufacturing plant in Newark, New Jersey. The year was 1870, and Edison was twenty-three. Al-



THOMAS EDISON and Hugo Steinmetz, two geniuses of the 20th Century, are pictured here in 1922 examining the effect of artificial lightning on insulators. They often conferred on experiments.

ready a success as an inventor and manufacturer, he might have rested on his laurels, but, being Edison, he did not even pause . . . spurred on by his fertile brain, and driven by boundless energy, he plunged into a period of endeavor and achievement unequalled by any other great man of science.

The years following 1870 are properly called the hectic years. Edison drove himself an average of 20 hours a day, turning out invention after invention, with each of his creations giving rise to manufacturing industries which gave employment to thousands of people. Edison's immediate assistants won for themselves the name of "the insomnia squad," but few visitors to the plant would guess that the "boss"—the man who was doing more than any other to shape the world's industrial civilization—was "The man whose clothes were always tousled and who frequently lacked a shave."

In 1871, deciding that production was taking up time he should be devoting to invention, Edison turned over the management of the Newark factories to assistants and set up his laboratory at Menlo Park, New Jersey. To celebrate the move, he announced his discovery that electrically-generated waves would travel through space. This "etheric force," as he called it, is the principle on which wireless telegraphy and radio are founded. Further work in this and related fields brought Edison to the point in 1885 when he was able to transmit signals from shore to moving ships and between stations and moving trains.

### Work With Marconi

Great names associated with Edison during this period included Guglielmo Marconi. Drawn together by their mutual interest in telegraphy, they became personal friends—an association which led Edison to make patents available to Marconi rather than to a competitor who offered more money, and which led ultimately to recognition of Marconi as the inventor of the wireless telegraph.

Edison gave the scientific and industrial world another notable "first" after settling at Menlo Park. Up to that time, the process of invention had been a one-man, one-brain undertaking. Edison changed this by putting research on an organized basis, an innovation which freed him from time consuming detail work and eventually made possible his most celebrated invention—the incandescent lamp . . . the forerunner of the world's great power utility systems.

Of all Edison's inventions, his favorite was the phonograph, which he created in 1877, the same year he invented the carbon telephone transmitter. The carbon transmitter made the telephone commercially practical—Edison invented the transmitter and Alexander Graham Bell the receiver—and later made radio possible when the same principle was adopted in developing a practical microphone. Perhaps the most amazing thing about the phonograph is that the first model, costing but $18 and operated by a hand crank, was a complete success. Ten years later, Edison developed a motor-driven machine, the universal popularity of which literally carried the inventor's name around the world.

Two years after the phonograph came Edison's crowning achievement— the incandescent lamp. But even while the first model was glowing in his laboratory, Edison was aware that the invention of a practical lamp alone was not enough to replace gas as the most common means of lighting. With characteristic thoroughness, he, therefore, set out and invented a complete generation and distribution system, including dynamos, conductors, fuses, meters and a score of other devices. Indicative of his concern with electrical problems is the fact that of the 1,097 United States patents granted to Edison, 356 dealt with electric lighting and the generation and distribution of electricity.

The number of patents granted to Thomas Edison does not necessarily reflect the total of his inven-

*(Continued on page 12)*



ALTHOUGH he was born at Milan, Ohio, Thomas Edison spent many childhood summers in this house at Vienna, Ont., near St. Thomas. Built by his grandfather, Capt. Samuel Edison, around 1812, the house was removed to Henry Ford's Greenfield Village at Dearborn, Mich., in 1937.



VIEW of Edison Tower at Menlo Park on the site of the experimental lab where the first practical incandescent lamp was produced.

tions. Competition was fierce, and piracy was not unrare. On one occasion, a lawyer, entrusted with filing 57 new patents, is said to have stolen the papers and sold them to Edison's rivals. Considering the time and effort represented by the stolen papers, Edison must have been one of the most charitable and generous of men. He refused to prosecute or, indeed, to publicly name the culprit.

'His family might suffer," said Edison.

### New Research Centre

The year 1883 was a significant one for Edison and for mankind. In that year he opened up the limitless world of electronics with his discovery of what was to become known as the "Edison effect." A few years later, finding that the facilities at Menlo Park were becoming inadequate to meet the demands of his ever-expanding activities, he built a new and larger research laboratory at West Orange, New Jersey.

When Thomas Edison took his talents and tools to West Orange in 1887, he was 40 years old, and was entering what proved to be the fullest phase of his remarkable career. During the first four years in the new laboratory, he took out more than 80 patents on the phonograph and the dictating machine alone, and worked, at the same time, on such other projects as the X-ray and the motion picture camera. He also launched his search for an acidless battery.

The world of medicine benefitted directly from Edison's talents when the inventor applied himself to the study of the X-ray after its discovery by Roentgen in 1895. Within a few months, he produced the fluoroscope, an invention which he did not patent, wishing to leave it in the public domain because of its universal need in medicine and surgery. His experiments with the X-ray also led to his invention of the fluorescent electric light.



REPLICA of the first practical incandescent lamp which Thomas Edison demonstrated at his Menlo Park, N.J., laboratory on October 19, 1879.

Edison's love for the phonograph led him to invent the motion picture camera. He saw that it would do for the eye what the phonograph did for the ear. So it was that, when the first motion picture was projected in his laboratory in 1889, sound motion pictures were born as well, as Edison had arranged for the picture to be accompanied by synchronized sound from a phonograph. The inventor later added sound to a projector perfected in his laboratory and introduced it commercially in 1913, thirteen years before Hollywood adopted it as a means of improving its film products.

Edison had unbounded faith in Nature—and his 10-year research for the acidless battery was undertaken to prove his theory that there existed in Nature the elements for a battery that would not be destroyed by its own corrosive action. Edison proved his point, and the world today benefits from the hundreds of industrial uses of the inventor's alkaline storage battery. Chemistry claimed Edison's attention in 1914, when World War I cut off European

# CONTRIBUTORS TO A VAST STOREHOUSE

**Many men, with Edison, have added to the sum of man's knowledge of Electricity**

PERHAPS the mightiest contributor of all to the sum of man's knowledge of electricity, Thomas Edison, nevertheless, does not stand alone. For, before his time, and since, there have been many men—inventors, scientists and researchers—who helped enrich what is today a vast storehouse of scentific knowledge.

First of the moderns who helped set the stage for Edison's explosive arrival was William Gilbert, a physician at the court of Queen Elizabeth I of England, who took up the study of magnetism where Thales of Greece had left off twenty-two centuries earlier. Gilbert's "De Magneto," published in 1600, is among the earliest printed records related to electricity. It won for Gilbert universal recognition as the father of electrical science.

Another century passed before another Englishman, Stephen Gray, called attention to the difference between conductors and non-conductors of electricity. Insulation was discovered a few years later by the Frenchman, Charles du Fay. And it was during this period that friction machines capable of producing small amounts of electricity came into being.

The pace quickened in 1745 with the invention of the Leyden Jar. The discovery of this device, in which charges of static electricity could be built up and stored, provided the basic principles for some of the most important advances in electrical science. Interest in electricity was by this time becoming widespread in America, as well as in Europe, and Benjamin Franklin's famed kite investigations provided the link that joined Old World and New in a common search for further knowledge.

It was Luigi Galvani, "the father of galvanic electricity," who thought he had found the cause of vitality when he discovered, in 1786, that the dismembered leg of a frog reacted convulsively when charged with electricity. Alexander Volta, in addition to proving that what Galvani had actually discovered was a new way of producing electricity, invented the "voltaic pile," the first generator of continuous electric current.



REPRODUCED from a book, "A Tribute to Michael Faraday" by Rollo Appleyard, this historical sketch shows the famous English scientist at work in his laboratory around 1852.

Sir Humphrey Davey entered the picture in 1806 with the world's first arc light, the forerunner of today's incandescent lamp. Twenty years later, in France, Professor Andre Marie Ampere invented the solenoid, a discovery which was to make a major contribution to the invention of the telegraph by Samuel Morse in 1837.

From France, the focus again shifted to England, where Michael Faraday was carrying on the classic research and experiments that led to his invention of the dynamo. By discovering the means of transforming mechanical energy into electrical energy efficiently, cheaply, and in quantity, Faraday made it possible to commercialize many applications which, up to his time, had been confined to mere laboratory experiments.

Michael Faraday died in 1867. Thomas Alva Edison was twenty years old at the time, but already well on the way to taking up the torch of electrical research and development that today burns at the summit of man's knowledge. ■

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supplies of carbolic acid. The inventor took just 18 days to produce a synthetic acid, and within a month was producing it at the rate of a ton a day. Chemical researchers are still studying the vast field he opened up in his subsequent work on coal-tar derivatives.

The entry of the United States into the war brought new problems, which were compounded by the destruction, by fire, of his West Orange manufacturing plant. His laboratory was spared, however, and his work, now largely devoted to problems of naval warfare, went on. When the war ended, Edison was past 70. He was looking forward to taking it easy, he told an interviewer, when he reached the hundred mark.

The great inventor still thought only in terms of scientific and

*(Continued on page 30)*

Ontario Water Resources Commission

leads the Province's search for

# cool water

by Joan Allen





HARROW FIREFIGHTERS celebrated inauguration of the Essex County community's new water system with a mass hose display. Construction of the new system by the Ontario Water Resources Commission for Harrow entailed the building of a new pipeline from Lake Erie, three miles away.



AN OWRC FIELD MAN RUNNING AN ON-THE-SPOT DISSOLVED OXYGEN ANALYSIS

In the search for water — clean and pure for drinking, plentiful for crops and for a thousand and one industrial uses, mankind has tried everything from dancing to digging. And a few, somewhat tongue-in-cheek, have even entertained the idea of towing icebergs from the Arctic.

African natives and North American Indians, led by their local witch doctor or medicine man, have tried to coax a downpour from a clear blue sky by praying, dancing and singing, sometimes for weeks at a time. Slightly more successful were the professional rainmakers of the late 19th Century, who promoted get-rain-quick schemes throughout the mid-Western United States. Although a lot of them had to leave town in a hurry, a few actually produced rain on schedule—although some say it was pure coincidence.

They seemed to have discovered the principle of "seeding" clouds, which is still under investigation by the National Research Council in Canada and by the United States Government. Early experiments with silver iodine crystals seem to indicate that rainfall in hilly country can be increased by 10 to 15 per cent.

Also very much under investigation is water "witching" or water divining. Those who "have the gift" are reputed to find underground springs with the help of a Y-shaped tree branch or twig, which twitches, sometimes gently, sometimes violently, when it's held above water. Even "believers" are hard pressed to find an explanation for the phenomenon.

Converting salt water to fresh—long the dream of science fiction writers—is now economically feasible for the first time in history. Some 500,000 people live on about 12 million gallons of de-salted salt water daily, but the cost of conversion had always been too high for use on a large scale. On the strength of a new process, five demonstration plants to convert salt water to fresh are being built in the U.S.A.

Such a process might be useful in thirsty Saskatchewan, where oil companies have hit up to 40 barrels of salt water a minute while testing for wells.

The problem of fresh water in Canada, however, is by no means confined to the Prairie Provinces. Surprisingly enough, Ontario, with more fresh water resources than most other countries in the world, has also been faced with water shortages. And one would think that with the Great Lakes, the world's largest reservoir of fresh water, and the countless lakes, rivers, and streams, water would be the least of the Province's worries.

Why, then, has fresh water been a problem in Ontario? First, most of the water isn't close to the larger centres of population. The majority of the lakes and rivers are in sparsely-settled central and northern areas. The densely-populated sections of the Province in industrial and agricultural Southern Ontario do have the Great Lakes, of course, but most communities are located inland.

And to make matters worse, a good percentage of Ontario's fresh water resources, including the Great Lakes, are polluted. Prime Minister Leslie M. Frost has estimated it will cost $2,500,000,000 from all sources over approximately 20 years to clean them up.

Alarmed by the increasing pol

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lution and water shortage, the Ontario Legislature, in 1955, appointed the Ontario Water Resources and Supply Committee to investigate the situation.

The following year the committee reported: Ontario's water works, public sewage systems and sewage treatment plants were woefully inadequate. During the depression, communities had no money for such systems and, during World War II, materials were not available. The result was that many communities finally found themselves with unsatisfactory water supplies, and many had to dump untreated sewage and industrial wastes into lakes and streams.

As well, many cities and towns on the shores of the Great Lakes couldn't build enough sewage treatment plants to keep up with the industrial and population growth. This explains why Toronto beaches and others have been condemned as unsafe for swimming, and why the use of water for lawns has been restricted in some sections during the summer months.

Following this report, the Legislature set up the Ontario Water Resources Commission in 1956, and in the 1957 session considerably widened its scope.

At present, the OWRC consists of six Commissioners, who are responsible for the Commission's policies. These are Chairman A. M. Snider, Waterloo; W. D. Conklin, Q.C., Kingsville; Mayor R. M. Simpson, Arnprior; Dr. J. A. Vance, Woodstock; A. A. Wishart, Q.C., Sault Ste. Marie; and C. F. MacNaughton, M.P.P., Exeter. Dr. A. E. Berry is general manager.

### Two Main Objectives

The Water Commission has two main objectives. The first is to protect the province's water resources from pollution and to ensure that public water supplies are safe for drinking and other uses. To accomplish this, the OWRC keeps a close watch on all sewage and industrial wastes, which must be properly treated before being discharged into any body of water in Ontario. This body also has the power to prosecute any municipality, industry or person found polluting a body of water and who refuses to remedy the situation.

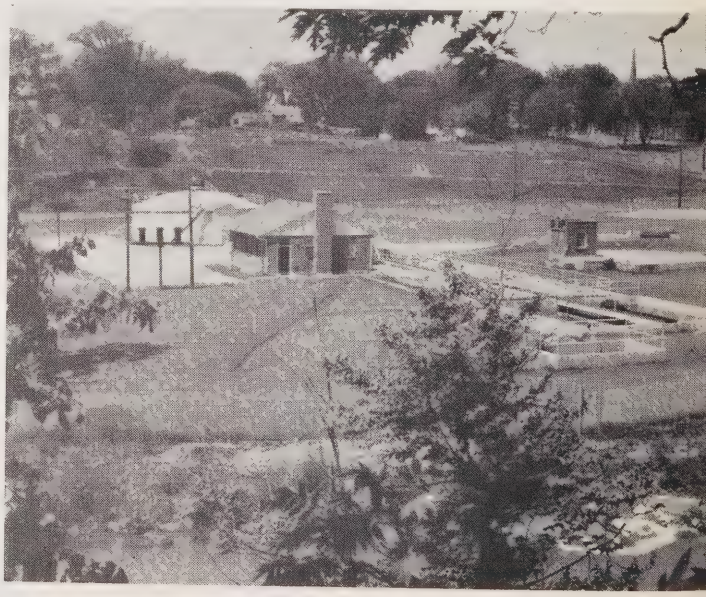
If an industry hasn't discovered any method of successfully treating its complex waste materials, the Commission's laboratory scientists set to work on the problem. In addition, the Commission checks all industries' waste disposal projects.

The second principal responsibility of the Commission is to help any municipality in Ontario obtain an adequate supply of pure water and dispose properly of its sewage and industrial wastes. The Commission approves all municipalities' plans for new waterwork or sewage systems or expansions of existing facilities. In addition, if a municipality wishes, the Commission will design, build, finance and operate such works. In the latter case, the municipality repays the OWRC over a period of years.

This approach to municipalities' problems of water supply and sewage disposal is believed to be unique with the OWRC. In the relatively short time it has been in existence, it has been responsible for construction of municipal sewage works valued at $40,000,000 and waterworks at $15,500,000. To date, 73 sewage projects and 68 waterworks systems are in operation,



ELECTRIC HEATING is just one feature of the ultra-modern water treatment plant at Brockville. In the main pump room are Brockville P.U.C. officials, Craig Garret, H. W. Little, James Roughley and W. W. Ashworth.



THIS SMALL sewage treatment plant built by the OWRC on the Credit River for the Village of Streetsville, is typical of several throughout Ontario designed to reduce pollution of waterways.

under construction or approaching the construction stage.

### 30-Mile Pipeline

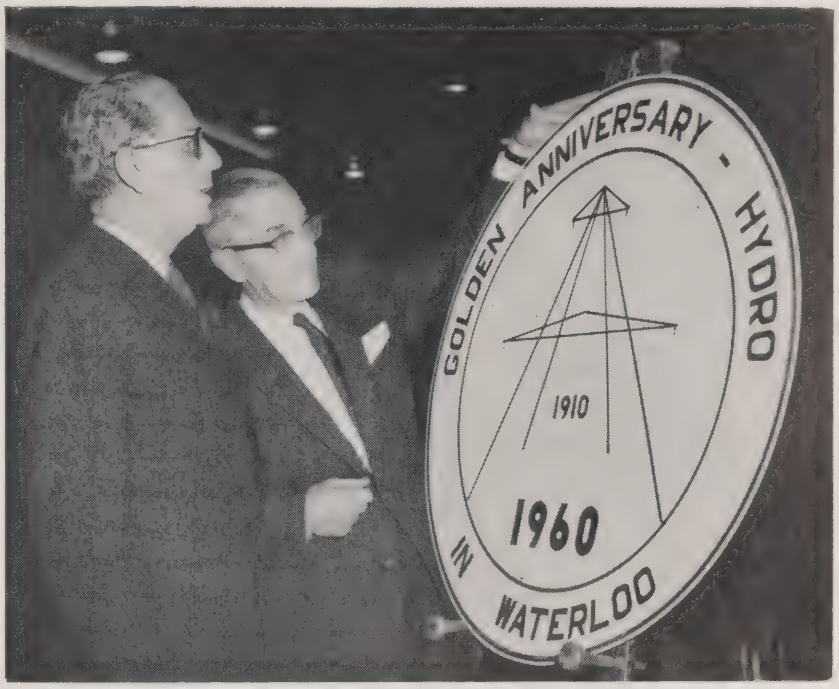
A major work undertaken by the Commission was the 30-mile pipeline system, including a fully-automated filtration plant, which provides Lake Erie water to parched Essex County. Leamington, Essex and their neighboring townships, as well as two major industries, have benefitted directly.

The OWRC is well into its program to protect and clean up the water resources of the province and to provide an abundant supply of pure water to its people.

There's one method of supplying fresh water as yet unexplored by the OWRC: icebergs. Although it has quite a few followers, the idea has its disadvantages. So that the salts of the sea water would have already settled out, they would have to select a really old iceberg. And even the most enthusiastic supporters haven't solved the problem of moving the icebergs out of the Arctic.

But supposing this could be done—where would you stash an iceberg while it melted? ■

CHAIRMAN of the Ontario Water Resources Commission is A. M. Snider (right), a member of a distinguished Waterloo County family, with Ontario Hydro Chairman J. S. Duncan, during a recent ceremony marking 50 years' Hydro service for the growing community of Waterloo.






ONE SEWAGE TREATMENT PLANT now serves North Bay and adjoining Widdifield and West Ferris townships. This was the first OWRC integrated sewerage project. Work of laying the outfall pipe proceeded during freezing weather.



ACTION at the goal mouth is vividly described by Foster Hewitt, one of the world's most famous hockey commentators, from the gondola in the rafters of the arena. Hockey games like this between Toronto Maple Leafs and Montreal Canadiens are the Gardens' "bread and butter."



Life at Toronto's Maple Leaf Gardens flows on an electric current

# Sports Palace

by Gordon Murphy

"It's hockey night in Canada!"

The words have an immortality all of their own. And, when spoken into the microphones located in the famed "gondola" high above the ice surface of Toronto's Maple Leaf Gardens, Canadians from coast to coast come to rapt attention before hundreds of thousands of radio and television sets. Far below the "gondola," on the brilliantly lighted ice, players of the opposing teams flash back and forth, criss-crossing, forming and reforming lines in patterns of play that can be as bewildering to the novice as they are exhilarating or depressing to the experienced hockey follower—depending on the sympathies of the viewer.

Hockey is an absorbing and volcanic game, and when the throng at Maple Leaf Gardens come to its feet with an approving roar for a hero or one of disdain for an opposition tactic (or referee), electronics carry the reaction almost simultaneously from British Columbia to Newfoundland.

The red light flashing behind the goal after a brilliant play is seen on television screens from coast to coast. And when the goal judge presses that all-important button, he summons energy from an Ontario Hydro generating plant to flash his decision to the waiting millions.

It is most doubtful if the goal judge would have time to consider all of this as he reaches for the button; about as improbable as the fact that Father Louis Hennepin, the first white man to view Niagara Falls, foresaw the harnessing of the thundering river to drive the wheels of industry and provide the power necessary to light and service the many needs of such sports and entertainment centres as Maple Leaf Gardens.

"We just couldn't operate without electricity."

The speaker is Doug Morris, superintendent of Maple Leaf Gardens, and as he runs down a list of the uses to which electricity is put in the building—a sequence ranging from an electronic device to measure the density of smoke, going up the Garden's chimney, to the freezing and care of the ice surface and the operation of the arena's famed Wurlitzer pipe organ—the visitor gets some idea of what electricity does mean in the life of Maple Leaf Gardens.

The ampitheatre of the arena is lighted by more than one hundred 1,000-watt bulbs in clusters of four to the fixture. The lights are controlled by dimmer equipment, and are provided with color screens for such spectaculars as the ice shows and stage presentations that have come to the Gardens for many years.

Additional lighting for certain events is provided by floodlights hanging high in the four corners of the arena, with each corner providing illumination equivalent to 36 one-thousand watt bulbs, all set in colors and controlled by Thyratron control equipment. This equipment, incidentally, was first used in Canada at Maple Leaf Gardens, but is now in general use in other centres.

More lighting, also controlled by dimmers, comes from "down spots," which, in the Gardens, are 1,000

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ELABORATE lighting system is put to the test by the demands of such spectacular events as ice carnivals.



ROYALTY IN THE GARDENS. Her Majesty Queen Elizabeth listens and watches intently as the Gardens' President Conn Smyth explains the fine points of hockey during her visit to Toronto as Princess in 1950. Another interested spectator was H.R.H. Prince Philip.

watt color spotlights. Then there are the 10 high-intensity arc lights, also adaptable to many colors, which are used to spotlight movement in many of the variety shows presented here. It may be of interest that these arc lights are operated from direct current through two, 200-horsepower generator sets. The reason for the direct current, according to Mr. Morris, is that these particular arc lights give better performance with it. Indirect current is fine if the lights are specially designed for it, but those at the Gardens are not.

Added to the maze of lights available in the amphitheatre is the stage lighting equipment, which provides for the needs of a duplicate of a regular theatre stage. Border lights of 500-watts in three colors: one-thousand watt fresnels, which are special spotlights directed at areas requiring highlighting—these, along with other accessory stage lighting equipment, all controlled by three portable dimmer boards, are the lighting in-



PREPARING for a wrestling match, the Gardens staff starts ice removal. Refrigeration system stops and then hot water is applied. Plows break up the ice and tractors push it into pits containing hot water under the spectator stands. Ice can be cleared out in less than 2 hours.

gredients that go into a stage production at the Gardens.

The most obvious of the array of electrical marvels in the Gardens is the Sportimer, a large four-faced clock hanging directly over the centre of the rink on which the passing seconds and minutes of the event under way are recorded. Driven by a synchronous motor, the Sportimer is linked with a battery of four penalty clocks on the north wall of the arena. Of the Gardens' own design, as was the Sportimer, the penalty clocks are operated by telechron motors, and automatically record two to five-minute penalties.

Rounding out the electrical timing system is another battery of clocks, also connected to the Sportimer. In this system, there is one clock for every player on the ice, with the exception of the goal tenders, during a hockey game. Operated by representatives of the opposing teams from a booth in the south end of the rink, the purpose of the clocks is to record the time spent on the ice by all players during a game.

Basic to the operation of the building that hockey has made famous—and possibly vice versa—is the ice-making equipment. This consists of three 60-ton capacity compressors, each of which is driven by a 100-hp. synchronous motor. All three compressors are in operation when ice is being made, but once the ice has been built up to a thickness ranging from ¾ inch to 1¼ inches, it can be maintained by one machine.

The refrigerant, ammonia, is used to cool brine, and the brine solution is driven by means of 25-hp. pumps through circulatory pipes buried about three-quarters of an inch below the surface of the rink's concrete floor. The combination of electricity, ammonia and brine make it possible to lay a fresh sheet of ice on the rink's 17,000-square-foot surface in about 10 hours.

Far above the ice surface in the south end of the arena is another major electrically-operated installation—the console of the recently installed Wurlitzer pipe organ, which was formerly a fixture at Shea's theatre in downtown Toronto. The organ, however, is now a far cry from what it was when it thrilled the city's theatregoers. The Gardens added about 50 per cent more pipes to increase the wind pressure, and the entire operation of the organ is now carried out from a five manual keyboard by means of electric control circuits.

Another innovation that has won the approval of the hundreds of thousands who flock to the Gardens every year is the escalator system. There are six escalators in all—four running from the main floor of the building proper to the first floor of the arena, and two from the first floor to the second floor of the arena. The escalators are completely reversible, and each is capable of carrying passengers at the rate of 5,000 an hour, giving the system a total carrying capacity of 30,000 an hour.

According to Gardens' officials, very few stair climbers are seen around the building these days. Patrons obviously have decided that they ascend better electrically.

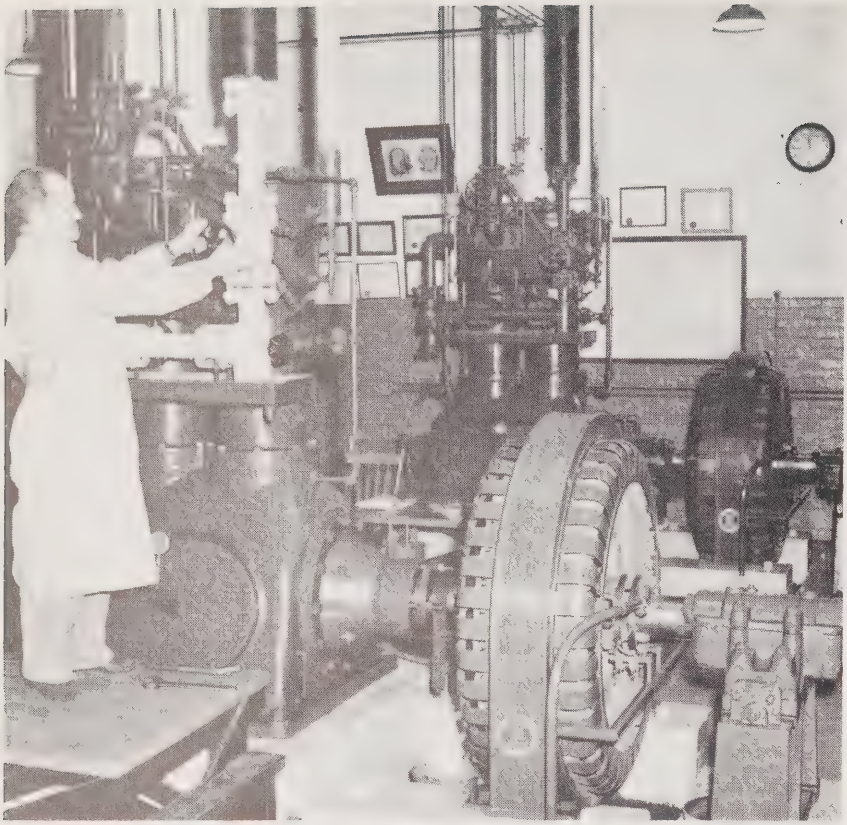
The number of uses to which electricity is put in the Gardens is amazing even to Doug Morris, who has an intimate knowledge of every switch and piece of equipment in the big arena.

"We get so used to it, we just take it for granted."

Mr. Morris has seen many changes in the lighting and general electrification of the Gardens down through the years, for he was an electrician on the Gardens' staff back in 1931, when the building was nothing more than a hole in the ground.

Canada, in common with most of the rest of the world, was in the grip of a depression at the time, and, with hundreds of thousands of jobless walking the streets, men with money and the courage

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GARDENS' chief engineer, Jack Gordon, explains operation of an ammonia compressor, one of three 60-ton capacity machines used in the ice-making process. Ammonia gas is converted to liquid to cool brine, which, in turn, is pumped through pipes under the floor of the arena.

to invest it were hard to find. But found they were, and principally by Conn Smythe, now president of Maple Leaf Gardens.

Mr. Smythe was convinced, depression or no depression, that Toronto needed a sports arena comparable to those in New York, Boston, Chicago and Montreal. A not inconsiderable number of people were equally convinced that Mr. Smythe needed a psychiatrist.

Mr. Smythe and his associates raised about $1,500,000, and with this money bought—according to the statisticians of the day—750,000 bricks, a million board feet of lumber, 70 tons of sand, 11 tons of gravel, 540 kegs of nails, 230,000 haylite blocks and about 14 miles of pipe. Five months later, on November 12, 1931, these materials, along with other supplies, had been transformed into what was advertised at the time as "The Heart of a Nation's Sporting Life," and the Maple Leaf Gardens was open for business.

### Foster Hewitt

That night from the gondola in the rafters of the new arena, a voice went out to Canadians gathered around radios throughout the land—a voice soon to be identified by millions with Maple Leaf Gardens and the word hockey itself. It was Foster Hewitt, with the most famous opening words in the history of Canadian broadcasting.

"It's hockey night in Canada!"

That Maple Leaf Gardens has prospered since that night may be gathered from a number of stories that have long been circulating concerning the chagrin of those who had the opportunity to invest and had regarded the venture as folly. What was "folly" in 1931 was, a few years later, being hailed nationally as a victory of vision.

The Gardens richly rewarded those who risked their money in the venture. The opportunity to invest was open to all, and it's a matter of financial fact that if an investor had bought 1,000 shares of Gardens' common stock as late as 1935 at the maximum price of $1 a share, and if he had retained the stock until 1956, his dividends plus the market value of his holdings, would have exceeded $100,000. Related to this is the fact that, during the first 25 years of its existence, close to 30 million people paid their way into the building.

While hockey is the bread and butter of Maple Leaf Gardens, the building is much more than a sports arena. It has housed everything from bingo to ballet; from "rock-and-roll" to productions of the world's greatest opera companies; from haranguing politicians to exhorting evangelists.

"Name an attraction," says Henry Bolton, the Gardens' manager, "and undoubtedly we have staged it at Maple Leaf Gardens."

Viewed from the outside, Canada's best-known building is a striking landmark of buff-colored stone and brick construction with a dome-like roof that actually moves. The roof was suspended, one corner free, to allow for expansion and contraction, and also to allow for the construction of the arena proper so that not a single post obstructs a spectator's view from any of the 12,568 seats.

The spacious corridors of the Gardens are lined with the pictures of sports celebrities, mostly of the famous personalities who wrote hockey history and became the idols of millions . . . and made a truly great Canadian institution out of the building whose founders said prophetically would be "The Heart of a Nation's Sporting Life." ■

# PIERRE LIKES THE LADIES

by Lois Hurst, Ontario Hydro Homemakers' Service



PIERRE BERTON uses this French knife when he works in the kitchen. Obviously it can also be used to emphasize a conversational point.

SINCE the beginning of a new year is reserved for reviewing past activities and making resolutions, we decided to examine Canadian housekeeping habits and pass along a few hints on how to make housework easier as well as less time-consuming in 1961.

For an honest impartial male opinion we asked Pierre Berton, celebrated *Toronto Daily Star* columnist, television and radio panelist, and gourmet, what he thought about Canadian housekeeping methods.

"The modern Canadian housewife is extremely efficient . . . well informed . . . progressive . . . and imaginative," declared Mr. Berton, "but to her disadvantage she is too efficient in her cooking." He leaned back comfortably in the swivel chair behind his massive desk, crossed his legs and continued emphatically, "She sacrifices flavor for convenience by cooking too fast . . . using too many instant foods and ready mixes. Real cooking takes loving care!" With increased emphasis, he continued, "Now we even have instant tea! Why? Isn't it easy enough to pour water on tea leaves?" When the convenience of tea bags was mentioned, Mr. Berton replied, "Even they spoil the flavor. I don't want the taste of cheesecloth in my tea! A tea egg is a proper saver of the housewife."

Mr. Berton has a terrible feeling that we may eventually reach the stage where pills will completely replace regular food although he admits that he takes a vitamin supplement to give him extra pep when he is working particularly hard.

On the topic of weight reduction, he claimed one of the currently popular reducing aids consisted of little more than pablum with some vitamin and mineral additives. He wondered how people could stomach such a concoction as a replacement for actual food.

Flavor in food is all-important to Mr. Berton. When he prepares the dishes, about which he later writes in his column, he works in the modern all-electric kitchen in his home. It is here that he also cooks the Christmas turkey every year. His favorite utensil is the French knife (see photo) which he uses for all paring, slicing, and chopping, while his most-used electrical appliance is the hand mixer ("particularly wonderful for eggs"), which hangs on the wall over the kitchen counter. Other much appreciated electrical appliances in the Berton household are the automatic washer and dryer, as well as the dishwasher. The electric coffee grinder is exceptionally popular, of course, and is used daily. Mr. Berton feels that modern electrical appliances have reduced the housewife's working day from twelve to eight hours.

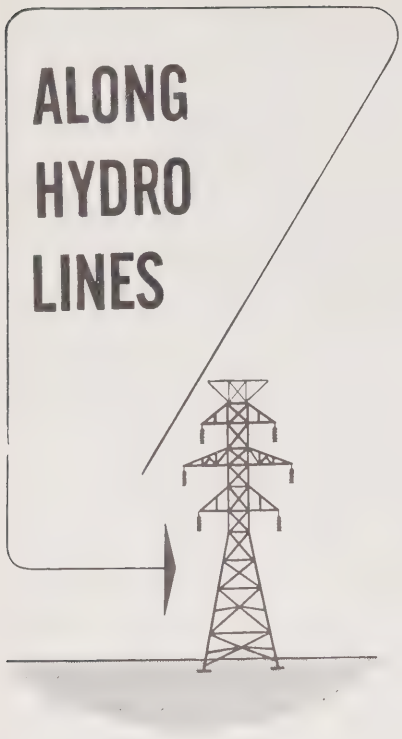
Many a housewife may work much longer, depending on the size of her home and family. When asked whether or not husbands should help out with housework in any way, Mr. Berton answered, with a twinkle in his eye, that he would not dare to answer for other men, but he doesn't himself, since he is "too busy buying bread, butter and chocolate cake" for his family. Just after he purchased his home, however, he insulated and painted it throughout himself. Now he prefers to pay for outside help.

Extra help is readily available, nevertheless, from the three Berton daughters, ranging in age from 8 to 12. They are responsible for setting and clearing the table, and for some cooking, strictly without ready mixes and instant foods.

Following our conversation with Mr. Berton, we began wondering just how many husbands actually do help with housework, so we questioned a number of Hydro husbands. To our amazement, every one of them admitted helping in some way or other.

Actually, if housework is a problem, Mr. Berton asserted, "then perhaps the fault is with the house, not with the wife . . . houses are (sometimes) not made for housekeeping. The architects and builders are to blame for this . . . architects keep designing homes that demand more care than is necessary. For example, frames around windows are nothing but dust catchers, and light colored walls are difficult to care for with small children in the family." Mr. Berton feels that housewives are more progressive than architects,

*(Continued on page 28)*




### First Galt P.U.C. secretary dies

Active in many phases of community life for more than a half-century, Andrew B. Scott, one of Galt's "grand old men," died on November 1 in his 91st year. Born in Brant County, he spent almost his entire life in Galt.

For several years he was engaged in Galt business enterprises before being appointed secretary-treasurer of the first local hydro-electric commission in 1911. He held that position until the formation of the present public utilities commission, when he was appointed as the first secretary-treasurer. He retired in 1946 after nearly 35 years' continuous public service.

One of the organizers of the Galt Kiltie Band, the deceased was prominently identified with First United Church, particularly in Sunday School work. He was also a past president of the local Kiwanis Club and Horticultural Society.

He is survived by his wife and two daughters.

### Scarborough P.U.C. builds electrically-heated garage

Electric heating is planned in the new garage which Scarborough P.U.C. is now constructing on Underwriters Road. This will be the first building of its type to be heated by electricity in Scarborough Township. Individually-controlled units suspended from the ceiling will heat the $157,000 structure, which will house 40 motor vehicles.

### Owen Sound line forman dies

William John Gunn, a line foreman with Owen Sound P.U.C., died recently at his home in Owen Sound.

Mr. Gunn had been with the Owen Sound utility for 40 years, having started his service in 1919 as a lineman. "He was one of the most valuable and highly respected employees of the commission, and his death is a real loss to our utility and to the entire community," commented Robert Butter, general manager of Owen Sound P.U.C.

He is survived by his wife, two children and four grandchildren. A resident of Owen Sound most of his life, Mr. Gunn was a member of Knox United Church and an honorary member of the Crescent Club.

### Toronto Hydro engineer dies

An electrical engineer with the Toronto Hydro-Electric System for 34 years, Franklin A. Ellis died recently. Active in lodge and church work, Mr. Ellis served with the 164th Battalion during World War I, being severely injured in 1918. He is survived by his widow, two sons and one daughter.

### Hydro rural service

Ontario Hydro operates more than 47,000 miles of distribution line — almost enough to girdle the equator twice — to serve nearly half a million rural customers.

## PIERRE LIKES THE LADIES

*(Continued from page 27)*

and usually have a better idea of what is practical for their own household.

**Household Hints for 1961**

1. Organize your work and stick to a schedule which should be flexible enough to accommodate any crisis that may arise. Include your shopping trips and outside activities as well as your routine work, in this schedule.
2. (a) Don't spend a whole day on laundry. Do a load, daily if necessary, as the clothes accumulate.
   (b) Remove items to be ironed from dryer before they are bone dry, and iron at once.
   (c) Cut down on ironing by folding sheets, pillowcases, T-shirts and towels immediately after the dryer has come to a stop. Then let these clothes sit and they will almost "iron" themselves.
3. By vacuuming rugs weekly you'll not only remove deeply embedded dust and fluff up the crushed pile, but you'll also prevent damage by moths.
4. As you go about your daily routine, clean one complete room at a time. Make the bed, clean the floor and furniture, in that order. This will save considerable time.
5. For more satisfying results when dusting, make use of your electric cleaner and its attachments.
6. To fluff pillows or dust draperies, set your electric dryer on "no heat" and let the items tumble for a few minutes.
7. To save steps in the kitchen, store utensils in that area where they will be used. For example, baking sheets and pans should be near the mixing centre.
8. When baking, double the quantity of your recipe, and freeze half of the baked goods. You'll have fresh cookies, cake or bread simply by defrosting.

Happy housekeeping in 1961! ■




ONTARIO HYDRO'S bright red and yellow flag, fluttering at the prow of the Nanabush, drew attention from remote Manitoulin Island camps on McGregor Bay when the new work craft made its maiden voyage to Birch Island.

## WATER TRUCK

WHEN Manitoulin Island Hydro customers call for emergency repair service now, they may find the Commission's Manitoulin Area crew arriving by boat instead of one of the familiar red and yellow Hydro trucks.

The new service "vehicle" is the 160-horsepower diesel-driven "Nanabush," which was recently delivered to Manitoulin Area Manager A. H. Wood for maintenance and construction work in the district.

Painted in the distinctive Hydro work equipment colors of canary yellow, green and white, the sturdy little vessel (shown in the accompanying photograph) has sufficient space on her decks to move heavy work equipment to sections of the island not served by roads—even a muskeg tractor.

The 39-foot vessel, with a 13-foot beam, which has been designed to safely navigate even the narrow channels in the area has a maximum speed of 10 knots, is equipped with a radio telephone. This will enable the water-borne Hydro crew to communicate with the Commission's land-based service centre at Kagawong and other radio-equipped vehicles on the Island. Work tools, lighting and an electric range in the galley will be operated by a diesel motor generator set.




*(Photos by the Manitoulin Expositor)*

Joe Aise, who suggested the name for the new boat, states that "Nanabush" was the first Medicine Man on Manitoulin Island. His name is a legend among the Indians of that district. Nanabush was known for his daring deeds and miracles throughout Canada and the Northern United States.

Mr. Aise is past secretary of the West Bay Board of Indians, and has summer employment with Ontario Hydro.

Next spring the new Ontario Hydro work boat, with the Commission's flag fluttering from its mast and Captain Clarence Smith at the helm, will once more commence its watery forays into the McGregor Bay, Whitefish and Killarney districts (where it will be used mainly) helping the people in those sections to "live better electrically." ■

### Sudbury Area crews praised

An accident-free safety record which has now passed the four-year mark was recognized recently when members of the Ontario Hydro forestry crew of the Sudbury Area were commended for working 1,527 days without a lost-time accident. The line maintenance crew has completed 781 days without a lost-time injury.

### York County picks oratory winner

Competing with 14 other pupils at Newmarket recently, 13-year-old Paul Ferraro, Richmond Hill, was judged the best orator in the York County Elementary School Oratorical Contest. Speaking on "Hydro in my Community," the young student also won the right to compete in the zone finals between York, Halton, Peel and Ontario counties where winners will be selected for participation in the Ontario Elementary Schools contest sponsored jointly by Ontario Hydro and the Ontario School Trustees' and Ratepayers' Association.

### Thamesville reeve dies at Chatham

Reeve of Thamesville for the past three years and a Thamesville utility commissioner, Angus Graham died in Chatham Public General Hospital on November 5. Mr. Graham was village clerk for some 17 years.



## ACCIDENT-FREE RECORD

In recognition of a record of 1,000 days without any lost-time injuries, members of Ontario Hydro's Peterborough Area staff were honored at a dinner in that city recently, during which John MacLellan, the Commission's director of accident prevention (left), presented a plaque to Area Manager Robert H. Aspinall. ■

## THE MIRACLES OF EDISON

*(Continued from page 13)*

industrial progress. His desire was "to do everything possible within my power to further free the people from drudgery and create the largest possible measure of happiness and prosperity."

That Thomas Alva Edison succeeded in his life's purpose was attested to when the world paid homage to him on October 21, 1929, the 50th anniversary of his invention of the incandescent light. A year earlier, he had been awarded the Congressional Medal of Honor, his country's highest award, in recognition for services rendered.

Time, one of the few forces with which Edison could not cope, was now running out on the inventor. But Edison would have been the last to admit it. Creative thought and hard work was still his creed. "Genius," he told a newspaper reporter in one of his last interviews, "is one per cent inspiration and ninety-nine per cent perspiration."

When past 80, he was working on another great experiment . . . one that was to culminate before his death on October 18, 1931, in the production of rubber from golden rod grown in his experimental gardens in Florida.

To sum up the career of such a man would be to combine the total of the electrical knowledge that came before him with the genius and drive that was peculiarly Edison's. As to his influence on his own times, and the present and the future, it is, perhaps, no better expressed than in the citation that accompanied his Congressional Medal of Honor:

"He has led no armies into battle—he has conquered no people—yet he wields a power the magnitude of which no warrior has ever dreamed. He commands a devotion more sweeping in scope, more world-wide than any other living man—a devotion rooted in human gratitude, and untinged by bias of race, color, religion or politics." ■

### Prominent O.M.E.A. member dies

Active in community affairs for many years, T. A. Cada, a former member of St. Clair Beach H.E.C. and vice-president of O.M.E.A. District 8, died in Riverview Hospital after a lengthy illness.

In his 79th year, the deceased served for several terms on the Windsor Separate School and Vocational School Boards, and on the St. Clair Beach Hydro Commission from 1951 to 1959. He retired in 1946 after 35 years' service with the Canadian Weights and Measures Branch, latterly as district inspector in the London division.

Predeceased by his wife, Mr. Cada is survived by three sons, including Reeve Fred Cada, St. Clair Beach, two daughters, three brothers and one sister.

### Hydro utilities reduce rates

Reductions in electrical energy rates have been announced by several Hydro cost-contract municipal utilities in recent months.

Effective December 1, 1960, Forest P.U.C. adjusted its retail rate structures, which will reduce the utility's estimated revenue from energy sales by 8.5 per cent. For residential customers with an average monthly consumption of 500 kilowatt-hours, this will mean a reduction from $5.31 to $4.81.

On December 1, 1960, the Village of Braeside Hydro System introduced a new rate schedule for all classes of customers which will decrease energy revenues by 8.7 per cent. Residential customers using 500 kw-hrs. a month will find bills reduced from $6.95 to $5.98.

Electric water heater customers of Richmond Hill Hydro-Electric Commission started 1961 with a lower rate. Bills for residential customers using a 1000-watt heater will enjoy a 7 per cent reduction from $3.59 to $3.35. Water heater repair service will be undertaken by this utility at no extra charge to its customers.

Rate reductions announced by these municipal utilities also apply to commercial and industrial power customers.

Five-minute radio series

## ". . . . OF PEOPLE OR PLACES"

Many Ontario radio stations are now carrying a new five-minute series of programs touching on the use of electricity in industry, business, at home and on the farm.

The weekly public radio feature is produced by Ontario Hydro, and will likely be carried by some 40 stations.

Stations carrying the program have scheduled it as follows:

| LOCATION | STATION | DAY | TIME |
|---|---|---|---|
| Barrie | CKBB | Sundays | 8.55 a.m. |
| Belleville | CJBQ | Sundays | Between 2.00 p.m. & 5.00 p.m. on "CJBQ—Sunday" |
| Brampton | CHIC | Wednesdays | 11.05 p.m. |
| Brantford | CKPC | To Be Announced | |
| Brockville | CFJR | Saturdays | 12.45 p.m. |
| Chatham | CFCO | To Be Announced | |
| Cobourg | CHUC | Wednesdays | 10.05 a.m. |
| Cornwall | CJSS-Radio | Wednesdays | 6.15 p.m. |
| Fort William | CJLX-800 | Mondays | Between 8 - 9 p.m. |
| Galt | CFTJ | Sundays | 4.40 p.m. |
| Huntsville | CKAR | To Be Announced | |
| Kenora | CJRL | Sundays | 12.20 p.m. |
| Kingston | CKLC | To Be Announced | |
| Kitchener | CKCR | Mondays | 1.45 p.m. |
| Kitchener | CKKW | To Be Announced | |
| Lindsay | CKLY | Sundays | 9.40 a.m. |
| Midland | CKMP | Mondays | Between 10.10 a.m. and 11.00 a.m. |
| | | Fridays | 5.30 p.m. |
| Oakville | CHWO | To Be Announced | |
| Orillia | CFOR | Saturdays | 1.10 p.m. |
| Oshawa | CKLB | Sundays | 7.05 p.m. |
| Owen Sound | CFOS | Sundays | 7.55 p.m. |
| Pembroke | CHOV | Mondays | 2.05 p.m. |
| Peterborough | CHEX | Tuesdays | 7.40 p.m. |
| Peterborough | CKPT | Saturdays | 7.31 p.m. |
| Port Arthur | CFPA | Sundays | 6.30 p.m. |
| St. Catharines | CKTB | Saturdays | "Saturday Showcase" |
| Sault Ste. Marie | CKCY | Sundays | 11.15 a.m. |
| Sault Ste. Marie | CJIC | Sundays | 12.55 p.m. |
| Stratford | CJCS | Fridays | 8.15 p.m. |
| Tillsonburg | CKOT | Sundays | To Be Announced |
| Wingham | CKNX-Radio | Sundays | 6.55 p.m. |
| Woodstock | CKOX | Wednesdays | 6.55 p.m. |

Support

# NATIONAL ELECTRICAL WEEK

February 5 - 11

### Blyth superintendent resigns post

Associated with the electrical system at Blyth almost continuously since 1919, William Thuell, superintendent of Blyth Hydro-Electric System has resigned to accept a position with the County of Huron at Clinton. Mr. Thuell joined the civic staff at Blyth when the village was still generating its electric power at a small steam plant. In 1924 the municipality converted to Hydro service.

### J. E. Teckoe, Sr., dies at Windsor

Well-known in the municipal utility field for many years, John Edward Teckoe Sr., former manager of Niagara Falls Hydro-Electric Commission, died at Windsor on December 17th after a long illness.

The late Mr. Teckoe has resided at Windsor for the past 15 months at the home of his son, J. E. "Ted" Teckoe, general manager of Windsor Utilities Commission.

In his 88th year, the deceased was born in Shrewsbury, England. A former director of the A.M.E.U., the late Mr. Teckoe retired from his position with Niagara Falls H.E.C. in 1945. A prominent Mason and a member of the United Church, Mr. Teckoe is survived by his son, one daughter, Mrs. Fred Jeffery, Beamsville, three grandchildren and nine great grandchildren. Mrs. Teckoe predeceased him in 1952.

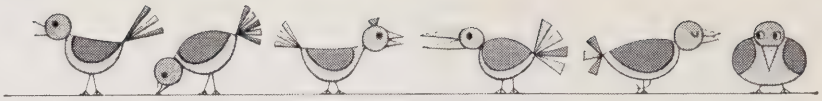
Interment was made in Fairview Cemetery, Niagara Falls.

### New commission for Beachburg

The Village of Beachburg in the Ottawa Valley has formed a hydro-electric commission to operate and administer the village distribution system recently purchased from Ontario Hydro for $52,000.

Establishment of the commission means that electrical rates in the village will be about 10 per cent lower than the rural rates previously in effect.

# OFF THE WIRES



JUST ONE final look back at 1960. The response to the cover of our December issue was both surprising and gratifying. We stopped counting the telephone calls weeks ago but, human-like, we deeply appreciated the complimentary remarks about Malak's color view of Ottawa by night.

* * *

ACCORDING to our esteemed Minister of Labor, Hon. Michael Starr, this is the time to get those renovation jobs done. In a "Do It Now" message, Mr. Starr rightly points out that your job will get better and faster attention during the winter lull than during the spring or summer, when skilled tradesmen are busy on bigger jobs.

* * *

ELECTRICAL UTILITIES can help in this campaign by encouraging their customers to have wiring in homes and other buildings brought up to modern standards.

* * *

THIS IS also a good time to promote the idea of having home electrical appliances and other equipment checked and repaired if necessary.

* * *

A "PLUG" for "Do It Now" in a utility's regular local advertisements and imprints on customer bills are good places to foster and support the campaign. One thing certain, local electrical contractors and dealers won't be a bit offended.

* * *

AT THE RECENT 39th annual meeting of the Association of Professional Engineers of Ontario, the briefest of 15 reports came from the Practice and Ethics Committee, which serves as the disciplinary arm of the association.

* * *

WITH TYPICAL engineering terseness, the report said: "In 1961 this committee hopes to do nothing; that is, if you fellows will co-operate."

* * *

ANY OF OUR MALE READERS like to get into a cherry pie championship? The Canadian Red Cherry Institute has just sent us a mouth-watering release about the 6th annual event. The release says some 600 students are competing in regional bake-offs.

* * *

IT'S A FAIR BET that one or more of the 12 finalists may be of the male gender. We got the surprise of our life to find that "masculine entries are increasing every year—in at least one area (Baden, Ont.) they are so numerous that the school bake-off will be on a 'boys against girls' basis."

* * *

CONGRATULATIONS to the nine Ontario municipalities which started 1961 with either a new status or enlarged areas.

* * *

PORT CREDIT became a town, while Petawawa and Stittsville were officially designated as villages.

* * *

LONDON, St. Thomas, Welland, St. Catharines, Aylmer and Port Dover enlarged their area by annexing sections of adjacent townships and other communities.

* * *

ST. CATHARINES, for example, completely absorbed the towns of Merritton and Port Dalhousie and a part of Grantham Township, quadrupling its area and doubling the population.

* * *

LONDON'S population is now about 50 per cent greater and the city about five times larger, since it annexed parts of London and Westminster Townships. ■

# how to **turn on the sun** ...for **five cents**... and dry a wash to be **proud of!**



An automatic electric dryer gives you "indoor sunshine" for your wash, *every* day of the year! And thanks to electricity, your clothes dry sunshine-fresh . . . with *no* sunshine fading and for only 5 cents a dryer load.

No clothesline soil . . . no clothesline sag! No weather-beating! *Everything* you wash—from delicate lingerie to hard-to-dry woollens—turns out soft, fresh and in perfect shape because they have been handled with care in the gentle safety of an automatic electric clothes dryer.

*To get more out of life . . . get the most out of electricity.*

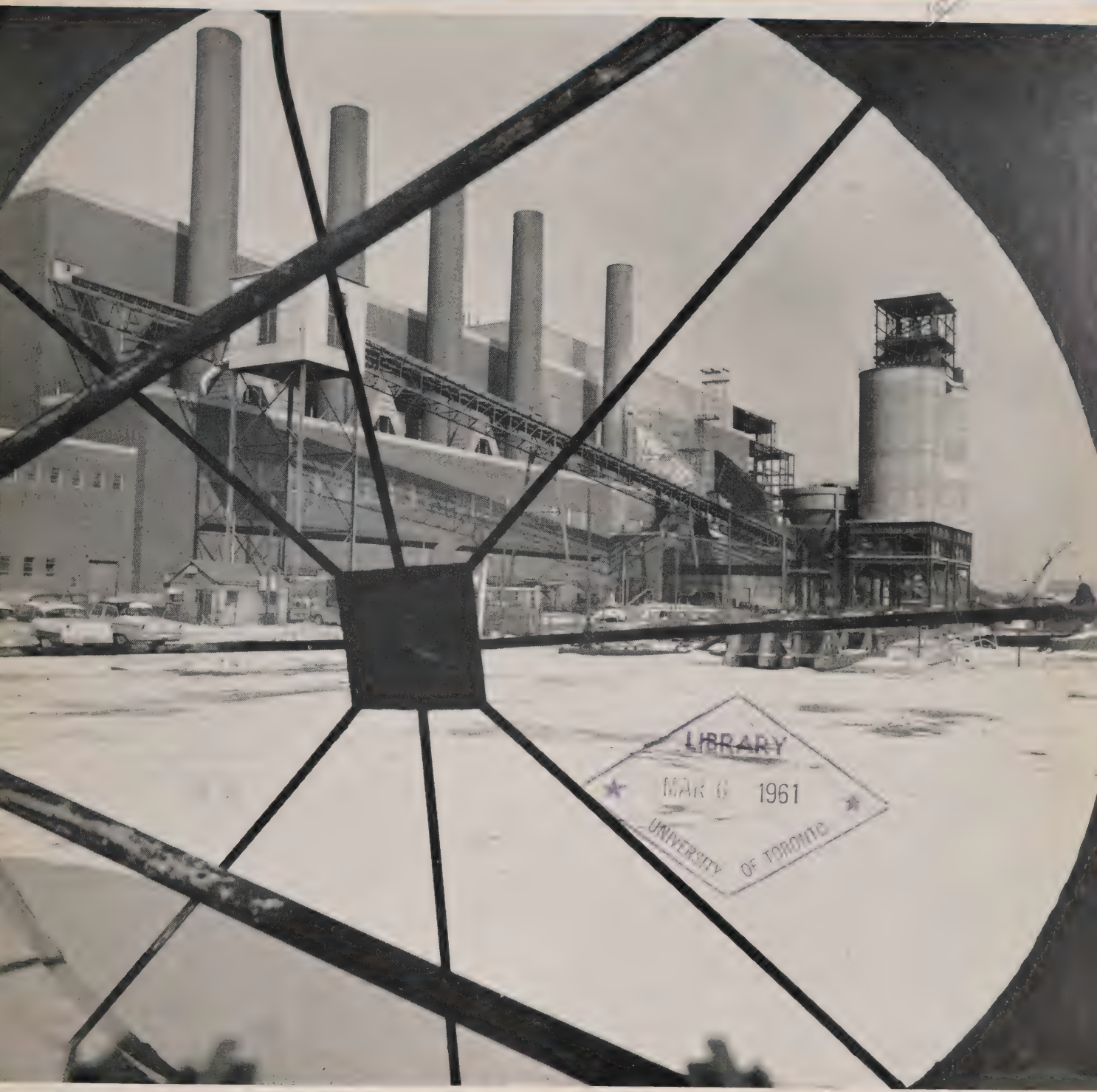
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(Sample advertisement—mats available to the associated municipal utilities for use in local "Live Better Electrically" campaigns.)





International photography awards - see back cover.



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# ONTARIO HYDRO NEWS

FEBRUARY, 1961

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# ONTARIO HYDRO NEWS

FEBRUARY, 1961 VOL. 48, NO. 2

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## COVER PHOTOGRAPHS

TED JOHNSTON and Harry Wilson, both well-known to municipal utility men throughout the Province, placed second and third respectively in the general category of the first Ansco Industrial Awards Contest and won honors for themselves and Ontario Hydro in doing so. Mr. Johnston's winning photo can be seen on this month's front cover. Mr. Wilson's graces the back cover. The winners were selected from among more than 1,700 entries, mostly from the United States. For the benefit of camera fans, both photographers used 4 x 5 press cameras with superpan press film. Both scenes were captured with exposures of 1/100 second at f 22. Ted used a K2 filter.

# Make it Memorable

CONSIDERABLE interest is being manifested in the recent Ontario Hydro announcement of an architectural competition, which has as its objective a home designed specifically for total electrical living in Ontario.

Although this rather unique competition (details of which are presented on page 23 of this issue) was announced to coincide with the 1961 observance of National Electrical Week (February 5-11), its cumulative effect will be spread over a much longer period. One of the main culminating points will, of course, be the public display of the winning designs in the Hydro building at this year's Canadian National Exhibition in Toronto.

Nevertheless, the competition represents one of the many methods which the electrical utilities of this Province can and should use to focus public attention on National Electrical Week. For, according to the sponsoring Canadian Electrical Council, this special week "provides each branch of the electrical industry with an opportunity to tell its story to the public, to further impress the value of electricity and electrical equipment in the welfare, economy and prosperity of the Canadian people."

Electrical utilities can give special significance to this important week in many ways. For example, it offers an excellent opportunity for implementing a valuable suggestion made by A.M.E.U. President Harry Hyde at several recent district O.M.E.A. meetings. In urging the formation of local organizations, comprising electrical utilities, contractors, manufacturers, distributors, dealers and even plumbers, Mr. Hyde stressed that sponsorship of a concentrated promotional campaign—a Kilowatt Karnival—should be one of the main objectives of these local organizations.

Why not during National Electrical Week?

Admittedly National Electrical Week is now past for another year, and most municipal utilities are, or should be, giving attention and effect to bold and imaginative customer relations and load-building programs. In this they will have the valuable assistance of the special committees formed by several O.M.E.A. district associations. Moreover, they can be taking full advantage of the services and advice available to them from the sales representatives of Ontario Hydro's regional offices.

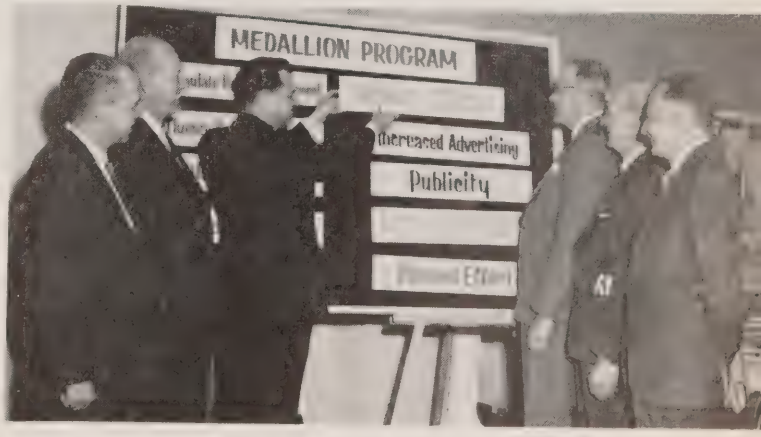
These utility programs will, of necessity, entail closer liaison and co-operation with the local electrical allies mentioned previously. Such liaison could, quite logically, lead to the formation of definite plans for observing National Electrical Week in future years in a manner worthy of the anniversary of the birth of that man of genius and ideas, Thomas Alva Edison. ■




DETAILS OF ONTARIO HYDRO'S extensive sales program for 1961 were recently outlined for commissioners and senior personnel. A presentation was later held for executives of the O.M.E.A. and A.M.E.U. W. R. Harmer, director of Sales Promotion, opened the session.



THINGS TO COME in sales promotion capture the attention of this Ontario Hydro group. From left: Chairman James S. Duncan, and Regional Managers A. M. Pedersen, Eastern; J. C. Ferguson, Georgian Bay; T. H. Gibbon, East Central; W. H. Edwards, West Central.




GORDON McHENRY, manager of Ontario Hydro's Residential Sales, makes his point with placards. Looking on (left), are Regional Managers H. R. Graham, Northeastern; D. I. Nattress, Northwestern; A. W. Smith, Central; J. R. McCullough, Niagara and R. M. Laurie, Western.

# a switch in time



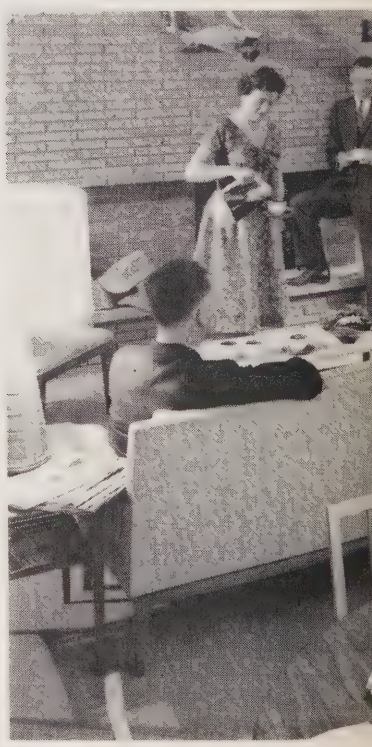
*(Photo by courtesy of Pass and Seymour, Inc.)*

ARE you living in the Dark Ages, electrically speaking?

There were never so many appliances on the market designed to make living easier. Learn how to get the most out of them.

Check your kitchen lighting. Do you work in your own shadow preparing vegetables, washing dishes? One overhead lamp is not enough. Add lights over all work surfaces. Install convenience outlets where you need them.

"Convenience" means you don't have to unplug the electric clock to use the kitchen radio . . . you can



TO A LARGE EXTENT, the use made of the family room determines its electrical needs. When providing switches for lamps, radio, TV, record player and other equipment, remember that no appliance should be placed more than six feet from an outlet. If the room will be used for meals or informal entertaining, provide outlets for a corn-popper, coffee-maker, blender, grill and waffle iron when planning electrical wiring.

use the toaster and coffee maker at the same time . . . and your broiler doesn't blow a fuse every time you use it.

You can start your whole dinner cooking with one motion. A series of noiseless switches inside your kitchen door will operate everything from one wall plate—roaster, blender, skillet.

Do you ever stab blindly at baseboards, trying to plug in lamps and cleaning equipment? Modern location for outlets is 48 inches above the floor. A new way to avoid tiresome bending and extra steps is to install combination switches and convenience outlets in one wall plate.

Last time you treated the family to waffles, did you have to drag an extension cord from the next room to do it? Wiring specialists will tell you that no electrical appliance should be used more than six feet from its wall outlet. Why? Most appliances come with a 6-foot cord . . . and extensions can create hazards.

In a home we know, the switch for the upstairs wall light is at the head of the stairs. One night Grandma groped for that switch . . . and missed her step. If the switch had been located in the middle of the hall—where it belonged—an accident wouldn't have happened.

How are your stairs lighted? You ought to have a foot-of-the-stairs switch to light your way up—and a mid-hall switch upstairs.

Now take a look at the living room. Here's a tip to impress others right in your own home. Install outlets directly behind that photograph, lighted picture, or wall lamp—and operate them from switches at the doorway.

Imagine the effect this would have on your guests in the living room! With a quick sweep of one hand you can start the electric fireplace blazing – dramatize window drapes with concealed light in the valances—and cushion your sofa and deepest armchair with soft, indirect lighting from the ceiling.

Why not give your bathroom a glamor treatment—with electricity?

Put lamps on each side of the mirror—write finis to hubby shaving shadows after the beard is gone, you packing makeup into natural lines on your face. Do you read in the tub? Save your eyesight by installing a good light to shine over one shoulder while you soak . . . an approved switch at the door makes it safe. One wall panel can hold switches for your vapor-proof ceiling light, mirror and tub lamps.

*(Continued on page 4)*





*(Photo by courtesy of Pass and Seymour, Inc.)*

ANY BATHROOM rates a ceiling fixture, plus extra lights to provide a flood of illumination on the mirror. A vapor-proof ceiling light in the shower is a great convenience. Switches for ceiling light, mirror lights, shower light, fan, night light, can be grouped in one small panel at the bathroom doorway of any modern home.



FOR BEDROOM ILLUMINATION, a switch at the door should light a ceiling fixture or indirect valance lighting. Locate convenience outlets for lamps, radio, TV, electric blanket and heating pad near the bed. Good light is a necessity at the dressing table.



WEATHERPROOF OUTLETS for patio or porch will prove handy for many outdoor activities. Likewise, switches should be weatherproof unless they are inside the house or garage. Besides making lawn care more convenient, outdoor outlets make lawn and patio living more delightful and versatile. Garages and carports are safer with adequate outlets.

Maybe you'd like to build royal luxury into your bedroom, with modern electricity. A few bedside switches can start music playing, table lamps glowing, and electric blanket heating. Double or triple outlets give you a flock of "silent servants" so you can enjoy your home appliances to the fullest.

Combine pilot lights with outlets . . . as a reminder that the current is on. Some panels incorporate a soft night light so you can locate switches with ease.

There's a beauty bonus in having convenience outlets near your dressing table. Ever get out of the house with ruby-red cheeks, from applying rouge before a shadowed mirror? Fix bright lights at your makeup table. Work your hair dryer and electric shaver from this outlet too . . . with no one to hurry or interrupt you at your beauty rituals.

Outside the privacy of your boudoir, you may be the outdoor type. Each exterior wall of the house and garage needs an electrical outlet. Be sure to weatherproof them. Three-wire grounded outlets must be installed. All year 'round you can get 100 per cent service from outdoor appliances—whether it's your lawn mower you want to use, the hedge trimmer, the portable saw, or recreational lighting.

String lights on a Christmas tree in front of the house . . . illuminate your doorway for the holidays . . . spread a path of pink light on the snow leading to your door. It's easy—and safe—with adequate wiring.

Review this checklist to ensure safety:

—Have you enough light where you need it for reading, working, stairways?

—Are switches located for maximum safety and efficiency?

—Are you overloading circuits?

—Have you eliminated hazardous extension cords? ■

A THOUSAND DETAILS posed by amalgamation were ironed out at meetings like this. From the left are: Ernie Manuel, general foreman, Ontario Hydro's London Area; Gerry Claxton, maintenance superintendent, London P.U.C.; Jim McKechnie, operating superintendent, Western Region; Tom Gager, manager of Operations, London P.U.C.; Jack Wicks, acting manager, London Area.



# London Takes a Giant Stride

CITIZENS of London, Ontario, awoke on the first day of the new year in a city five times larger than it had been the night before. Some 34,500 acres and 58,000 new citizens were added, January 1, 1961, by annexation. London thus became the second largest city, areawise, in the province.

This big leap forward was not achieved without complications, of course, and one of the greatest readjustments involved the electric supply. Formerly served directly by Ontario Hydro's London R.O.A., the newly acquired territory is now supplied by the London P.U.C.

In the transfer, the London utility acquired more than 15,000 customers from Ontario Hydro, together with some 200 miles of rural distribution system and 12 distributing stations. Total purchase price was in excess of $4¼ million.

Personnel changes included the appointment of Arthur Ferguson, former manager of the London R.O.A., to the London P.U.C. as manager of engineering. Jack Wicks, who will continue as manager of the Lucan Area, has been named acting manager of the greatly depleted London Area.

Well staffed and equipped to handle its increased responsibilities, the London utility completely renovated its office facilities less than two years ago, and has been streamlining its operations ever since. "Annexation has been expected for some time," stated V. A. McKillop, general manager of the London P.U.C., "and we are quite prepared to provide our many new customers with the kind of service Londoners have come to expect." ■




WELL-EQUIPPED to handle the extra load imposed by amalgamation, the offices of London P.U.C. were renovated recently. Photo shows the attractive foyer.



COMFORTABLE CHAIRS are provided at the service desk for convenience of customers. Telephone operator on mezzanine directs calls to free service staff.



BARGES carry truck loads of concrete across the Ottawa at Carillon, where the rapids make it impossible to secure a Bailey bridge.

# Quebec Taps the

THIS AERIAL VIEW of the Carillon project, looking upriver, shows the spillway jutting out from south shore. Gap between spillway and the north shore has now been bridged.





# Ottawa

## Construction is well advanced at the Carillon project near Montreal

by Mike Sullivan

THE mighty Ottawa River, birthplace of one-eighth of Ontario's electric power resources, is yielding yet another giant generating station—this time to Quebec.

Work is continuing day and night throughout the winter on Hydro Quebec's new power plant at Carillon, 30 miles upriver from Montreal.

Literally translated, carillon means the reverberation of sounds emitted by bells—and the sounds of progress ring sharp in the crisp air. Temperatures of zero and below are the norm at this time of the year.

About 1,200 men are working at present on the $200,000,000 project. Last summer the work force totalled 2,400 and, at peak construction, expected next summer, the number may go as high as 3,000.

Twelve units are being installed at present, with space provided for an additional two. The plant will have a 12-unit capacity of about 600,000 kilowatts.

Carillon's first four units are scheduled for service late in 1962. The remainder will be brought in by 1964.

Perched virtually on the doorstep of Montreal, the Carillon plant is in a unique position to meet demand peaks, which it is slated to do in winter. During the summer it will be used for run-of-the-river base-load supply.

Unlike many Ontario hydraulic stations, the Quebec plant is rising in the midst of civilization, which offers many logistic advantages. But the project has had its fair share of problems.

At the start of construction, a Bailey bridge was built across the river, but the exceptionally high level of the Ottawa in 1960 carried it away. To get concrete from the north to the south shore, Hydro-Quebec used two barges, each capable of handling eight truckloads of concrete. These shuttled the river three times an hour. The concrete had to be remixed after the crossing.

Lack of a Bailey bridge also necessitated a 28-mile drive from one shore to the other—the nearest bridge is at Hawkesbury, which is 14 miles upriver on the south, or Ontario side. But this situation changed in January when the final stage of cofferdam construction was completed, providing a roadway.

To keep construction flowing, 10 boxcars are kept busy hauling cement and aggregate. Aggregates are brought in by rail from Lalande, seven miles away. The quarry produces 5,000 tons a day—and it's estimated the entire job will need 1,400,000 cubic yards of good quality concrete. Hydro-Quebec crushes aggregates for sand at the construction site.

At Carillon, the Ottawa River is 2,200 feet wide. The project will consist of a 2,500-foot concrete dam, which has the powerhouse on its north side and a

*(Continued on page 8)*



COFFERDAMS DIVERTED the river on the Ontario side during first stage of construction. Water now flows through this 785 foot sluiceway, and work is being concentrated on north shore.



THIS VIEW SHOWS early work being carried out on Quebec shore behind cofferdams. Powerhouse and extensive dykes will be located on this side. A new lock and canal section are to be built in this area.



785-foot spillway on the south. The headpond will be enclosed by 18,000 feet of earth dykes.

Two dykes will be built: a 2,400-foot dyke on the Ontario side, and a 16,000-foot dyke on the north shore to prevent water overflowing into the North River, which at this point runs parallel to the Ottawa, joining it about four miles downstream. This structure will also protect the nearby CNR line. The road in this section will be rebuilt on top of the dyke.

A lock on the north side, replacing the existing canal structure, will permit pleasure craft to navigate the Ottawa. Until this is completed, Hydro-Quebec will lift boats from the river and carry them by truck past the construction area.

Despite several complications, Hydro-Quebec found one great advantage at its Carillon site—there's no shortage of cribmen to work on the cofferdams. The area has a tradition for producing cribmen, and many who have worked for Ontario Hydro have come from the Hawkesbury district.

The men of the district inherited their calling from their ancestors, who got their experience with the lumber driving operations which have been active along the Ottawa River and its tributaries from the 18th century. And, as Hydro-Quebec engineers say, "anyone seeing a crib more than 100 years old sitting in the rapids in the middle of the Ottawa won't doubt that experience."

The Quebec Commission has four gangs of cribmen—10 to a gang—as well as a couple of divers. The standing joke at Carillon is that the divers are the lucky ones in winter: the water temperature never drops below freezing, while the air temperature can dip to 30° or more below zero. ■

# Ontario Hydro Facilitates Carillon Development

LAND buying being undertaken by Ontario Hydro in conjunction with the Carillon project is progressing satisfactorily. This involves land totalling some 2,600 acres on the Ontario side of the river which will be affected by the flooding. Approximately 200 properties in the town of Hawkesbury are included, as well as 20 outlying farms and parts of 30 others.

The formal expropriation of this property is a reciprocal move by Ontario Hydro to facilitate Hydro Quebec's Carillon development—one of the Ottawa River sites alloted to the Province of Quebec under the 1943 inter-provincial agreement. In keeping with this agreement, the Commission will buy the land for lease by Ontario to Quebec.

The co-operative arrangement has already enabled Ontario Hydro to build three generating stations on the Ottawa River, all of which flooded land on the Quebec side of the river. Quebec leased land to Ontario for the headpond areas of the Otto Holden, Des Joachims and Chenaux stations, which have added 699,000 kilowatts to the Commission's generating capacity since the end of World War II. These developments span the river upstream from Ottawa.

Harry Hustler, Ontario Hydro's director of property, points out that, under expropriation, title to the Hawkesbury area properties now passes to the Province of Ontario, but negotiations are being conducted with each owner to arrive at a mutually satisfactory purchase price. House moving plans are also being contemplated and Hydro is collaborating with government in the study of a low rental housing scheme. A team of Ontario Hydro property agents is on the scene at the present time.

To assist farmers affected by the flooding, Ontario Hydro has established a central clearing house of information about farm properties for sale. This is intended only as a service to aid farmers in completing their own negotiations for the purchase of new property.

River levels will be raised in 1962 when the first units of the Carillon project are scheduled to commence operation. ■



PROPOSED REHABILITATION at Hawkesbury is reminiscent of the St. Lawrence Power Project. Here, property agent George Gilbert examines plans of one affected resident.

# The best there is!

## Maurice Prior, the Granite Club's executive chef speaks out on electricity



ASK MAURICE PRIOR, executive chef of Toronto's exclusive Granite Club, what he thinks about electricity for commercial food preparation and he'll tell you, "It's the best there is."

"You ask me what I think about electricity?

"It's the best there is. I have travelled this world a good bit, and I've cooked with just about every conceivable fuel. After 30 years, I'm convinced."

Maurice Prior, executive chef of Toronto's exclusive Granite Club and one of Canada's foremost experts in the culinary arts, is a man who makes no bones about saying what he thinks. He is particularly forthright concerning food preparation for commercial purposes.

Recently, after helping to open Hydro's first Commercial Cooking Presentation in Niagara Falls, he relaxed in his hotel room, and the conversation got around to what is obviously one of Mr. Prior's favorite subjects.

"You know," he said, "there seems to be a reluctance on the part of many chefs today to part with the open flame cooking that has been a sort of way of life for cooks since the middle ages. Actually, I guess, it is just an ingrained habit—that and a reluctance to try something new.

"The pity is that electricity has so much to offer today to people who are operating commercial kitchens. Take the industry in Canada, for example.

"Persons operating resorts and hotels are confronted with the job of having to provide meals to people who arrive in droves, want good food and want it immediately".

Mr. Prior says this is a natural result of North American eating habits. "Time was," he feels, "when people were prepared to devote two hours or more to enjoying a meal.

"Today, a half-hour is often con-

sidered sufficient to squander on the time-wasting business of wolfing lunch.

"The point is that electric commercial kitchen appliances available today have much to offer in an era when the accent is on speed. And then, there is another point that all of us in this business have to face.

"Most of my cohorts will agree that getting and keeping good kitchen staff is a problem in this day and age. Electric appliances in a commercial kitchen mean that your staff works in 12-degree cooler temperatures than you find under other circumstances. That's a strong inducement for a good man to stay where he is.

"Not only that, but your management finds it has less to spend on installing ventilation facilities—they're just not needed in the same degree."

Mr. Prior also argues that electric cooking is so automatic today that the element of failure is cut to a minimum. Again, this is meaningful in terms of staff problems.

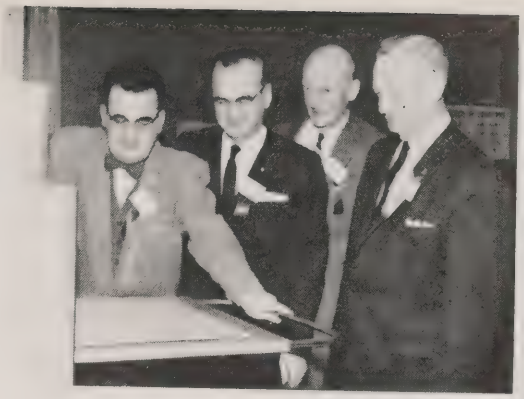
"Take an average man," he points out, "put him to work in an electric kitchen, tell him what to do, and he'll do it with satisfactory results.

"With other cooking fuels you can't make demands like that on an individual who isn't passably skilled."

Maurice Prior is a stocky, handsome Englishman who admits that his Oxfordshire accent lacks purity in view of five years he spent in Australia. His enthusiasm for electricity dates back to 1937 when, at the age of 20, and with six years of experience as a cook already behind him, he joined the British Merchant Marine.

He recalls how startled he was to discover that the galley in his first ship was an all-electric one. "I guess, when you think about it, all-electric ships' galleys make safe, practical sense," he says.

Since that time, Mr. Prior has practised his profession in leading hotels and restaurants in London and Toronto (he came to Canada seven years ago) as well as in Canberra, Australia.



MR. PRIOR (left) has a look at some of the equipment used in the presentation with Ray Pfaff, St. Catharines P.U.C. manager; J. R. McCullough, manager of Ontario Hydro's Niagara Region; and Mayor F. Miller of Niagara Falls.

He recalls one odd discovery he made while working "down under."

"Did you know that one of Australia's four leading hotels still has wood-burning cooking ranges in its kitchen," says Mr. Prior.

Does the man who oversee's the Granite Club's 60-member staff have any reservations about electricity? Practically none at all! "Ten years ago I might have had some criticisms to offer, but research and development in the manufacture of electrical appliances has eliminated just about any vestige of doubt I may once have had.

"You know, I believe that within the next two years or so we are going to see some startling developments in the design of electric commercial kitchen appliances. The problem of quick heat return, for example, is already being solved.

"I'll even go further than that," says Mr. Prior. "I'm willing to predict that the day will come when electric equipment will become a must—and not only because of some of the problems inherent in the use of other fuels.

"If you've ever been in a London smog, you will know what I'm talking about. The smog situation is becoming bad in cities in many parts of the world and, of course, the only answer is to eliminate the use of combustible fuels. I feel certain that the day will come when industry and government will have to make a decision—when combustible fuels will have to go."

During his visit to Niagara Falls, Mr. Prior took part in every one of the five sessions held during the three days of the Hydro commercial cooking presentation.

Besides going to work with an array of fine commercial cooking equipment provided by several manufacturers, he delivered two absorbing talks in which he reviewed the merits of such items as steam pressure cookers, fryers, grills and ovens.

With J. A. Williamson (manager of Niagara Falls Hydro Electric Commission), Ray Pfaff (manager of St. Catharines P.U.C. and past president of the A.M.E.U.), and J. R. McCullough (manager of Ontario Hydro's Niagara Region), he spoke to some 500 leading chefs, restaurateurs, electrical contractors and architects.

Justly famous as a food decorator (his artistic creations in pastry and sugar are a l e g e n d), Maurice Prior, through his association with such organizations as the Canadian Food Executive Association (of which he is president), the Toronto District Canadian Restaurant Association, and the Universal Cookery and Food Association, is in a position to champion electricity in commercial cooking.

Which is just what he does. ■



HYDRO HAS A NUMBER of 115,000-volt wood pole transmission lines like this. Butt-treated British Columbia red cedar poles up to 80 feet in length provide required ground clearance. Pine poles longer than 40 feet are not grown in Ontario.

# Hydro Poles

**First, an application of preservative**
**later tender, loving care**
**from Ontario Hydro's experienced line crews.**

PITY the poor Hydro pole.

In Africa, elephants use them as backscratchers and baboons as gymnasium equipment; in Norway, bears like to climb poles and swing playfully from their tops; in South America buzzards use them as lookout towers.

In parts of the United States, termites topple poles like tenpins, and in Ontario porcupines, woodpeckers and ants add to the destruction.

Around the world, in fact, hydro poles are subject to abuse from hundreds of species of insect and animal life. An even greater threat to hydro poles is provided by a lowly form of plant life.

Poles set in earth are prey to several species of wood-destroying fungi which attack a pole at the ground line and work rapidly downward and inward through the outer sapwood into the heartwood. Result: decay which can mean costly repairs or even replacement.

Talk to a lineman from an Ontario Hydro or municipal utility line crew, and chances are he can spin a yarn about the depredations of woodpeckers, ants, porcupines and fungi sufficient to make a strong man weep.

### 75 Years to Mature

Consider, first, that a pole-size tree requires some 75 to 95 years to mature. Then, remember that a pole from such a tree would normally have a life as a pole of only a few years were it not for Ontario Hydro's years of research in the care and treatment of poles.

Ontario Hydro has some 50,000 miles of wood-pole distribution and transmission line—or an estimated 1,000,000 poles to look after. On the average, Com-

HYDRO BUYS some 50,000 wood poles annually for distribution and transmission lines. Cut to size, they are shipped to preservative plants for treatment. This is an over-all view of Northern Wood Preservers Limited Port Arthur facilities.

# Get the Full Treatment

mission crews replace some 20,000 to 25,000 poles annually.

Yet, the startling thing about that last figure is that it is relatively so small. Without the years of experience that Ontario Hydro has already logged in efficient transmission and distribution operations, and without the years of testing and research that it has undertaken, the figure could have been much higher.

For one thing, Ontario Hydro selects its poles carefully. The man who does the purchasing is J. L. (Jack) Cooke, Supply Division, who says that, over the past 10 years, Ontario Hydro has bought some 50,000 poles annually to meet replacement and new construction work.

About 80 per cent of Commission pole purchases are pine—red and jack pine—grown and processed in Ontario.

Pine is used because of its low cost, its availability, and the fact that it takes preservative treatment readily. Spruce is probably more abundant, but it can't be used because it doesn't take treatment.

The remainder are western red cedar, purchased in British Columbia. Pine poles longer than 40 feet are not available in Ontario. Cedar poles up to 80 feet in length are used for wood pole transmission lines requiring greater height.

Cedar in short lengths is also used in urban areas, such as new subdivisions. Only the butts of the hardy western cedar poles are treated, for appearance sake.

Thirty-five-foot poles are commonly used for distribution lines, and most poles seen along the highway are this height.

**Mostly for Distribution**

Some 95 per cent of all wood poles used go into distribution lines. In transmission, most wood pole circuits are below 115,000 volts, but Hydro has a number of 115,000-volt wood pole lines, and completed a 100-mile 230,000-volt line from Otto Holden G.S. to Sudbury on wood poles in 1959. Actually, the trend is more and more toward steel towers.

Ontario Hydro buys its poles from producers, who cut them to size and ship them on flatcars to Northern Wood Preservers Ltd. at Port Arthur or Canada Creosoting Company Ltd. at Sudbury or Trenton for treatment.

The poles are machine shaved and piled in the

*(Continued on page 14)*





MOST SEVERE STRAIN to Hydro lines is imposed by high winds and ice. Wood poles pictured here snapped in the savage ice storms of 1959-60 and had to be replaced.



HERE, workers at a creosoting plant are handling wood poles which have been treated with preservative. Four-fifths of the poles Hydro buys are pine which is grown and processed in Ontario.

yards for seasoning in the open. They need about three summer months or the equivalent to bring their moisture content down around 20 per cent. Properly seasoned, they are loaded on trams and pushed into cylinders more than 100 feet long for full-length preservative treatment under pressure. They are saturated for 5 to 6 hours in a mixture of pentachlorophenol—the preservative—and fuel oil and then wheeled out and stockpiled.

This treatment is given all pine poles. The more durable cedar poles are butt treated. They are stood upright in open tanks of preservative for a number of hours and treated to the level desired.

Ontario Hydro's poles are kept in the tree yards and shipped out on order by flatcar and truck. The Commission has in the neighborhood of 100,000 poles on hand at all times, about half of them already treated and the other half undergoing seasoning.

### Ice and Wind

High winds and ice loading on conductors provide the most severe strains to pole lines. Wherever practicable, Ontario Hydro lines are built to handle a coating of ice one-half inch thick and a 55-mile-per-hour wind blowing directly across the line.

In a series of savage ice storms at the end of 1959 and the beginning of 1960—the worst in Ontario



TESTING THE STRENGTH of a wood pole is important, for it must stand up to the punishing elements. Here, a pole is given a pressure test by pulling in one direction. Worker, foreground, is measuring the deflection.

Hydro history—the load far exceeded this and 1,538 poles were broken and had to be replaced.

Day-in, day-out, though, the scourge of the hydro pole is the animal-insect-fungus triumvirate.

The Commission wages constant battle with these enemies. Its linecrews—long wise to the ways of porcupine, fungus, woodpecker and insects—are skilled in the job of spotting damaged poles and reclaiming and replacing them as needed.

During inspection, the above-ground sections of poles are examined first for any damage which shows externally. Then the pole is sounded by tapping it lightly with a hammer. If decaying internally, the pole will sound dull or hollow. Since this method isn't fool proof, however, a hole is drilled into the centre with an increment borer and a core sample extracted. If the wood is crumbly it is deteriorating.

Groundline inspection requires digging away the soil all around the pole to a depth of 18 inches, and this enables preservative application.

It's work that keeps the lineman on his toes but, even more important, it keeps the poles standing and the power flowing. Research and experience together continue to be just a little too much for the creatures that walk, fly, crawl or just plain eat.

And Ontario Hydro linemen will tell you they haven't lost a battle yet. ■

REFLECTIONS OF

# *Juliette*



Saturday evening, Juliette always catches the Juliette show at home.

## For TV Stars like this one, Video Tape



At rehearsal, Juliette teams in a duet with guest star Eddie Allen. Show's girl singing group, the Mice, await their turn while TV technician watches performance.



oops, they got a profile shot. n't like them."



"That bit was pre-recorded Nice, isn't it."



". . . get the potatoes out of your mouth, kid."



"You may get just a perpetual grin. I'm pleased with this gal."

## a Magic Mirror

by Arthur Brydon

For many television performers, the toughest task they must face is watching themselves on the screen.

It has long been the practice to record shows on film, not only to keep them for posterity, but also to allow those involved to conduct a painful post-mortem, picking out errors, analysing them and providing for their correction in future efforts.

With the introduction of video tape, it became possible to carry this a step farther. Now a show can be recorded in advance with no loss of quality, and the performer not only sees what the audience sees, he watches it at the same time.

This was the development which this year allowed Juliette to become part of her own viewing audience. For a half-hour every Saturday night, the beautiful blonde on the television screen is watched closely by the beautiful blonde on the long white chesterfield in a Rosedale apartment.

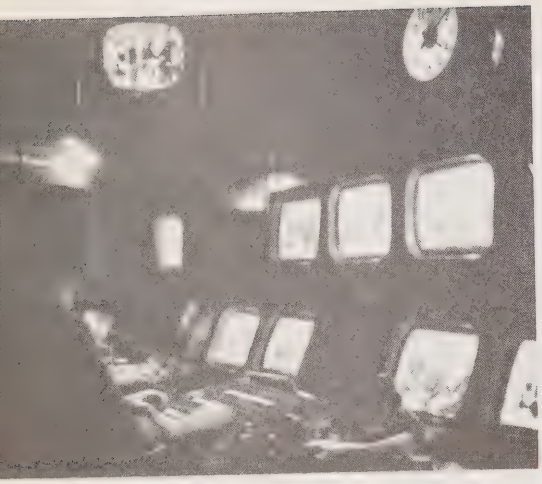
How does Juliette like Juliette?

You might expect her to be her own most severe critic (which she is) but, somehow, she also manages to be a fairly enthusiastic fan. There is nothing to be criticized in this. It is merely an expression of the

*(Continued on page 18)*



Juliette with guests Wayne and Shuster. Of Juliette, Johnny Wayne says, "She is the best of the Canadian professionals. It's a pleasure to work with her." Show features many big-name guest performers.



During taping, production crew mans a battery of monitors, other equipment. Video tape makes for an instantaneous process with no complicated film handling.

# WHAT ABOUT VIDEO TAPE?

It's good, but expensive.

The introduction of video tape to Canadian television almost three years ago simplified many of the technical problems of live production but, at the same time, injected a complicated and expensive new element into the medium.

The nearest comparison is in the simple, home tape recorder, for video tape works on the same principle with pictures. On one side of the two-inch-wide roll is a sound track, on the other a control track like the sprocket holes on a movie film to provide synchronization.

It is an instantaneous process with no complicated film handling as in kinescope recording. This allows tape to be played back almost at once in order to check for errors. The Canadian Broadcasting Corporation uses tape regularly on shows like Juliette's, but rarely allows editing or retakes.

The network wants live quality on its tapes, and unless the error is so horrendous as to paralyze the show entirely, it frowns upon the expense of doing it all over again. Hence you find the odd verbal fluff or a stray stagehand turning up just as you did with the live shows.

Tape was first used in the Calgary relay centre, where shows produced in the east are recorded and played back at a suitable hour to western viewers. The delay now is an hour or so compared to a lag of weeks, in some cases, with kinescopes.

The Ampex VR-1,000 video tape recording machine can take an hour-long show on 4,800 feet of tape. The half-hour Juliette show uses about 2,400 feet. The picture is recorded on a high speed rotating disc containing the magnetic recording heads. It whirls at 14,400 revolutions per minute, with tape going by at 15 inches a second.

CBC Toronto now has installed six of these machines at a purchase cost of $75,000 each, but that is only the beginning. The process of installation involves building them into studio control rooms, providing extra-powered air conditioning and putting in complicated switching equipment. This adds $50,000 to the cost of each unit.

What does all this mean in terms of electric power?

"We use a lot of it," a CBC public relations man says. When you include lights, cameras, air conditioners, offices and so on, it mounts up. I guess you'd have to say we're a pretty good Hydro customer." ■

## REFLECTIONS OF JULIETTE *(Continued from page 17)*

self-confidence which is expected from a professional performer.

Johnny Wayne and Frank Shuster were guests on a recent Juliette show, the first time they had stepped outside their own show on Canadian television.

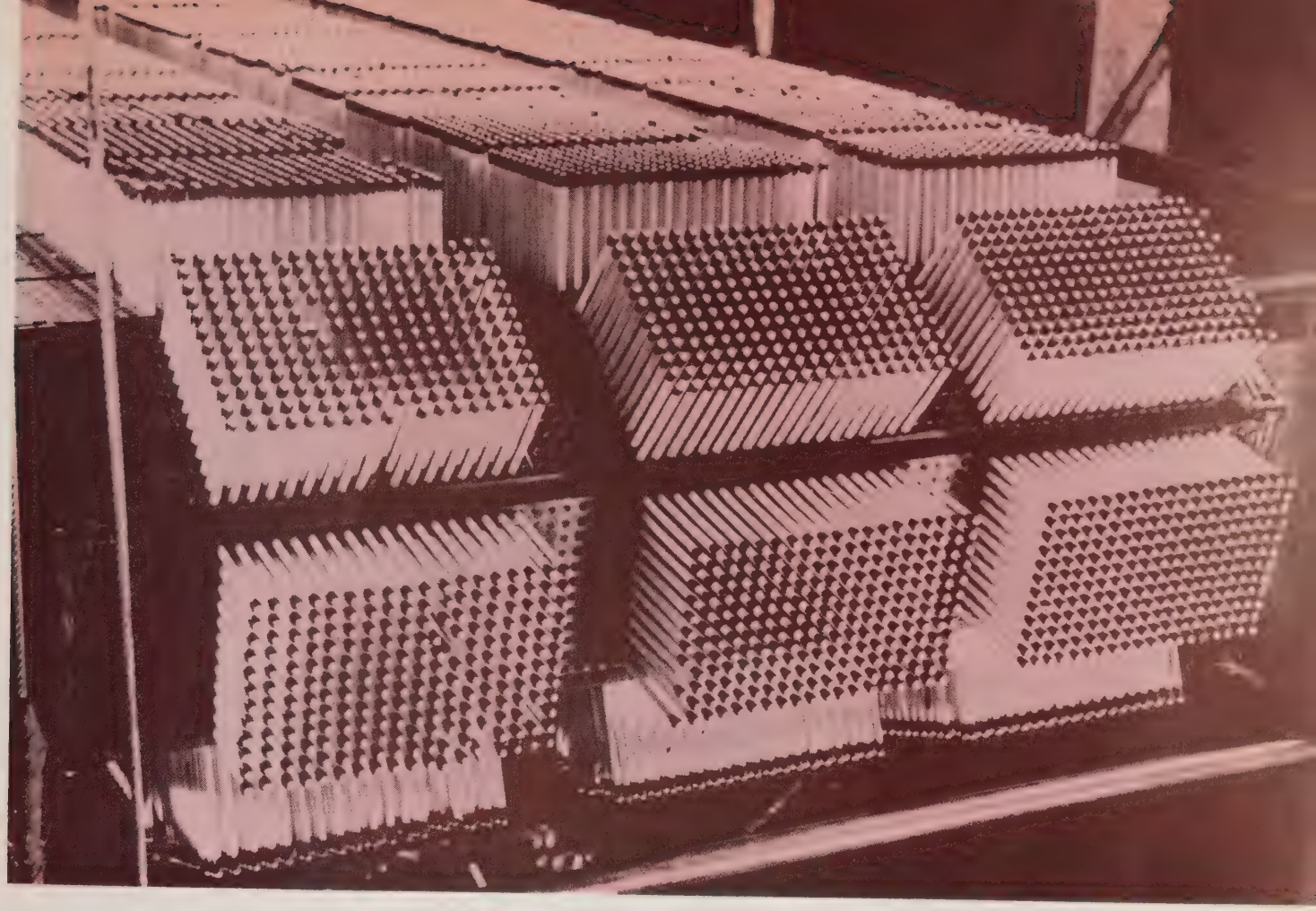
"She is the best of the Canadian professionals," Shuster said afterward, "it is a pleasure to work with her."

Juliette has a new, half-hour format this year following the hockey game. She works a week in advance, taping a show at 8 p.m. Saturday, dropping in to one of her favorite eating spots for a snack, and then home to watch the previous week's taping session.

On the Saturday night in question, she taped the show with Wayne and Shuster and then went to watch a show which included her regular singing groups, the Romeos and the Four Mice, and Eddie Allen, who gained fame on radio as a member of The Happy Gang.

Sitting on her white sofa, she cleared her throat as the television Juliette began the first number. She sang along with the Romeos but not with herself, drank coffee, laughed with great good nature, and helped herself through some difficult key changes.

"I don't think I look bad on the screen," she said. "I look older, but I'm photogenic. You may get nothing but a perpetual grin in these pictures, because I'm pleased with this gal, she does a good job." *(Mr. Brydon is a Globe and Mail writer.)* ■



# MEET YOUR MATCH

**One of the most common items in everyday use—the match is a complete mystery to most people. Here are some of its secrets.**

With modern miracles being introduced today, tomorrow and yesterday, few of us take time to reflect on the complexities of miracles that are centuries old.

One of these miracles has remained unchanged since the day it was discovered . . . fire. Appreciably changed, however, is the instrument that makes it, the accepted, so-simple-we-don't-think-about-it match.

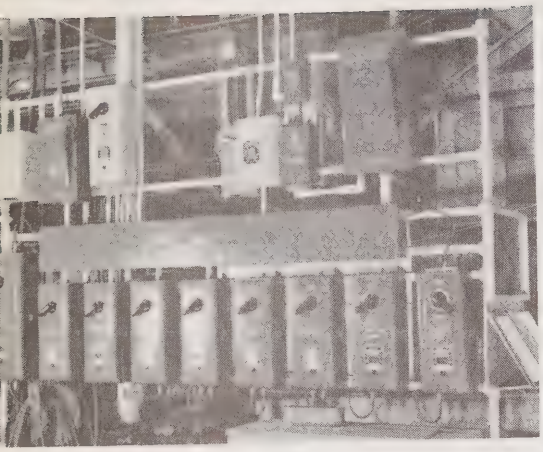
Look at a match . . . a sliver of wood with a neatly arranged colored bulb on one end . . . weight, a fraction of an ounce. It's disposable. We never pause to reflect on how it was developed.

Matches themselves did not come for centuries after fire had been put to use. In fact, it was not until about 150 years ago that vendors hit the streets of London hawking crude, evil-smelling miniature torches which were the forerunners of today's modern match.

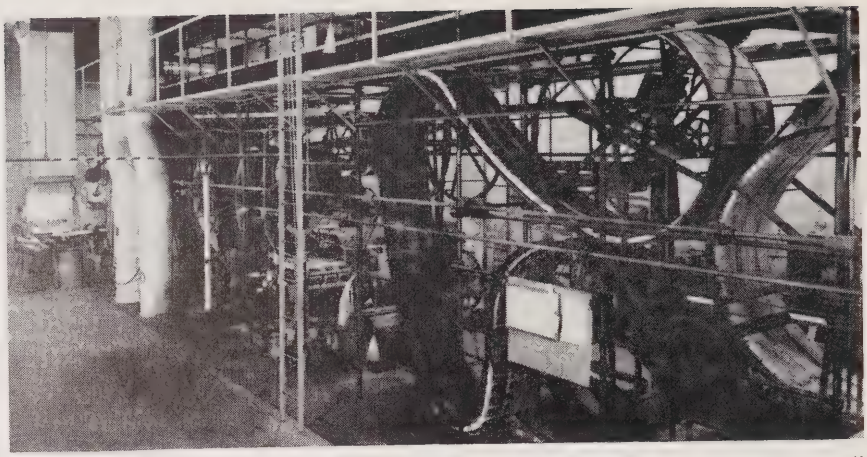
These were really only splints, the ends of which had been dipped in sulphur. They were manufactured in the home with every member of the family having a hand in it, and they were sold to match girls and boys, who hawked them to the sports of the era. Most of us will recall the famous "Match Girl" story of our childhood.

These homemade spunks, or matches as they were called, smelled so badly that storekeepers wouldn't keep them. But by this time the basic research for the chemical match had begun. The year 1805 saw the introduction of a mixture of phosphorus wax and

*(Continued on page 20)*



LIKE SO MANY vital industrial processes, match making depends heavily on electricity. This panel supplies the match machine.



UP AND DOWN and around they go on the automatic match machine which performs all processes of manufacturing a kitchen match from a block of white pine to packaging for the shelf. Jammed upright in the perforated belts, the matches are dipped in trays to form the heads.

oil. This was placed in a corked bottle, and, when fire was required, the sulphured splints were dipped into the bottle and ignited by rubbing on the cork.

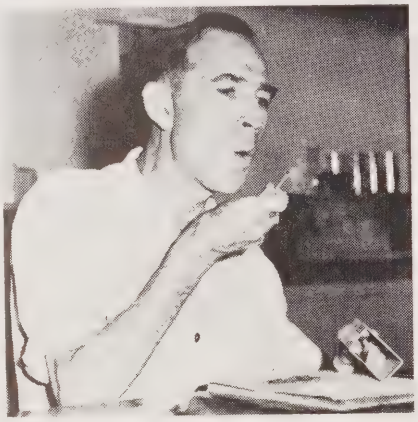
In the same year, another fire bottle was developed by Chancel of Paris. In this one, asbestos was saturated with sulphuric acid. The sulphured splints were tipped with a gum containing chlorate of potassium and powdered sugar loaf. To light it, one dipped the tip in sulphuric acid.

Obviously, these were cumbersome items to have around the house, much less in the hip pocket of a gentleman's britches.

The first friction match was introduced in 1827, when a druggist named John Walker of Stockton-on-Tees, produced a splint with sulphur tips. The only problem here was that they were inclined to go off with a loud pop, frightening nearby ladies out of their bustles.

The first phosphorus friction match was invented by Dr. Charles Sauria in 1831 at the College D'Darc Dole (Jura). Meanwhile Europe's match brains were perfecting a non-poisonous red phosphorus "safety" match.

Canadians, too, were dependant upon these crude methods of making fire. Then, in 1851, in Hull, Quebec, Ezra Butler Eddy began manufacturing matches by painstakingly dipping splints by hand. This was the beginning of the great Eddy Match Company, which



BILL BOUCHER lays claim to one of Canada's rarest jobs. To check match head solution he lights and blows them out. Bill's lifetime total is about 26 million matches.

is the only manufacturer of wooden matches in Canada at the present time.

The match industry, because of its fantastic productivity, is difficult to assess insofar as volume is concerned, but the Eddy operation at Pembroke, Ontario, produces many millions of matches every day . . . about an even split between wood kitchen and pocket matches and the popular book matches which were first introduced in Canada by Eddy in 1928.

Belying its simple appearance, a match is a complex instrument, built with painstaking care, and thoroughly tested for quality and safety features.

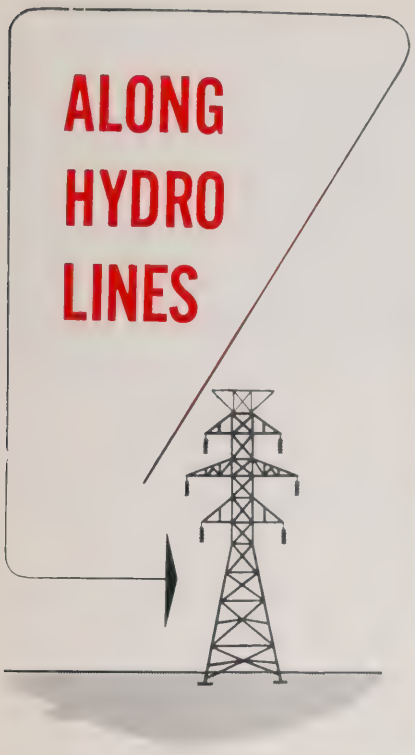
When you hold a match, if it is a kitchen match, you are holding a piece of white pine from somewhere near Nelson, B.C., which has strength, straight grain and no knots. That neat, two-colored head consists of bulb glue, quartz, sulphur, ground glass, starch, plaster of paris and potassium chlorate, to name a few of the chemicals involved. All of them have been mixed with the care of a new bride baking her first cake.

How a match is made out of a tree trunk is an interesting story. Let's look at a kitchen match from its birth.

Splints for the kitchen match are made in the first operation of an awe inspiring automatic match machine. Blocks of white pine are fed into a trough and splinted by a powerful punch process. Splinting is aided, of course, by the very quality of the wood. This same operation jams each splint up and into a hole on a giant, perforated conveyor belt (this accounts for the round end on the kitchen match). Thoroughly lodged into place and straightened up, they are dipped uniformly into the head composition, which is contained in under-

*(Continued on page 23)*

# ALONG HYDRO LINES



### New Central Region station

In anticipation of substantial power load growth as a result of the rapidly expanding population in Richmond Hill Area and Markham Township sectors of Central Region, Ontario Hydro is constructing a new $1,200,000 transformer station on Don Mills Road in the vicinity of the Village of Buttonville. This new 100,000-kw transformer station will be known as Buttonville T.S., and is scheduled to go into service after September. It will supply power to Richmond Hill Rural Operating Area and the Town of Richmond Hill, as well as a large section of Markham Rural Operating Area.

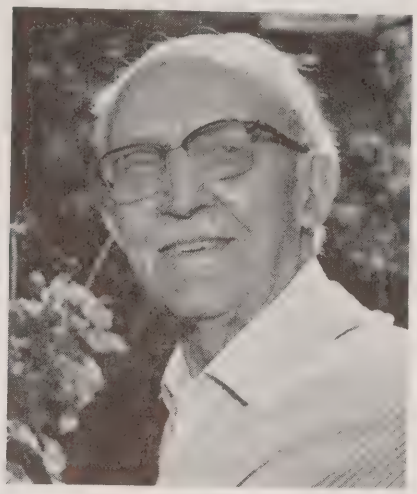
### St. Thomas plans celebration

Plans for the commemoration of the 50th anniversary of Hydro power in St. Thomas are rapidly taking shape. A highlight will be the unveiling of a plaque in the P.U.C. building by service foreman Joe Skelding. He holds the utility's long-service record with 49 years.

### Hydro veteran dies at ninety-one

Ottawa's electrical fraternity lost one of its oldest members with the recent death of John G. York. He was in his 92nd year.

Mr. York had witnessed the Capital's changing electrical scene



JOHN G. YORK

since 1891, when he commenced his career with the Standard Electric Company. He retired as distribution superintendent of Ottawa Hydro in 1938.

His son, Fred, is General Manager of the Ottawa H.E.C. at the present time.

### Oshawa honors P.U.C. chairman

A modern Oshawa substation has been named in honor of William Boddy, immediate past chairman of the P.U.C. The gesture was suggested by newly-appointed Chairman Henry F. Baldwin at the inaugural meeting.

Commissioner Boddy has been a member of the P.U.C. for almost 25 years, and served as chairman at different periods totalling six years.

### North Bay elects new chairman

H. B. McCubbin has been elected chairman of the North Bay H.E.C. for 1961. He will be serving his ninth term on the commission. Mr. McCubbin is secretary-treasurer of the Northland M.E.A.



## JOIN 25-YEAR CLUB

Four Peterborough Utilities Commission employees, three men and a woman, were welcomed into the commission's quarter century club recently. Commissioner Dick Raine presented 25-year pins and $25 cheques to Ross Hopkins, Miss Sybil Hood, J. B. Callan and Charles Fitzgerald, shown in the accompanying photograph, who have raised the club's total of active members to 33. ■





Top: Modern new headquarters of Newmarket Hydro incorporate offices, service centre and garage. Left: Proud of the new facilities, Dorothy Peters shows Bill Young and Fred Thompson of the Newmarket utility one of the convector type electric heaters installed throughout.

# TWO MORE UTILITIES MOVE INTO ELECTRICALLY-HEATED BUILDINGS

ANOTHER municipal electrical utility, Newmarket Hydro - Electric Commission, took a progressive step during the latter part of 1960 with the opening of its new and spacious office, service centre and garage.

Plans for the modern, $52,000 one-storey structure were prepared by Manager William Young, who also designed the electric heating system as well as the modern interior lighting facilities.

The attractive new headquarters building, which incorporates concrete block and brick in its exterior construction, provides space for a main business office, billing room, records vault, manager's office and an additional office, as well as staff facilities.

The service centre includes a stockroom, meter room and space for outside staff. A four-truck garage is located at the rear of the building. Baseboard convector type electric heating units have been installed throughout the new building.

The attractive civic structure reflects the growth of the community it serves. In the past 11 years the population of Newmarket has virtually doubled, and now numbers some 8,700 people, while load growth has more than doubled in the same period.

* * *

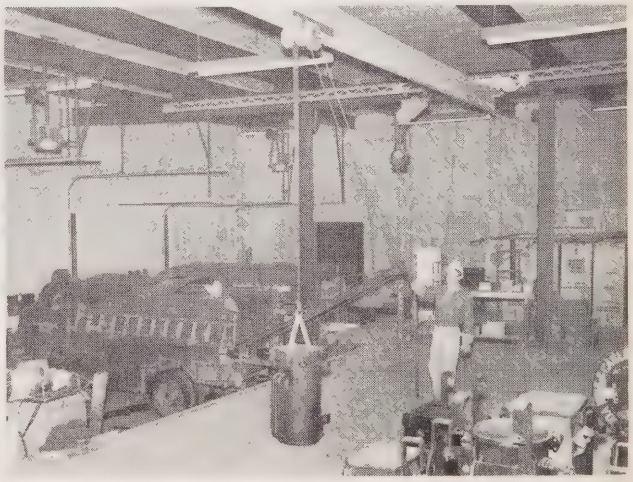
First stage of a consolidated headquarters for Richmond Hill Hydro-Electric Commission is a spanking new service centre providing 5,508 square feet of space for garage service work and storage purposes which was recently completed at a cost of $52,000.

Completely electrically - heated, the concrete block structure incorporates a four-truck garage, superintendent's office, meter, storage and stock rooms as well as staff facilities.

Present plans envisage the future possibility of moving the office from its present Yonge Street location into a new building to be built at a later date on a site adjoining the present service centre.

Completion of the new centre has given fresh impetus to the progressive utility's accelerated water heater program. ■





Right: Storage and handling facilities are tops at the new, electrically-heated Richmond Hill Hydro service centre. Top: Shown in the new meter shop are Verne Snider, Harold Howarth and William Wagner.

# WOODSTOCK PUC TO GET NEW OFFICE BUILDING



A NEW office and administration building for Woodstock Public Utilities Commission is scheduled for an early start. An architect's sketch of the proposed building appears above.

Two storeys high, the building will be situated on Graham Street. A storage building has already been constructed on the site.

Growth of Woodstock during the last 10 years has produced a heavy demand for new water and electrical installations, requiring increased staff and space. The present building is considered inadequate to meet the situation.

Estimated cost of the new building is $350,000. It is scheduled for completion by September. ■

**Home Design Contest Sponsored by Hydro**

A home designed specifically for total electric living in Ontario is the objective of an architectural competition announced recently by Ontario Hydro.

Endorsed by the Ontario Association of Architects, the competition calls for designs which meet the electrical industry's Gold Medallion standard. First prize is $2,000, with $1,000 and $500 for the second and third place designs.

The all-electric home is intended primarily for middle income suburban families, and must be readily adaptable to individual family requirements. It will incorporate all modern electrical conveniences such as cooking, refrigeration, water-heating, washing and drying. Electric heating and air-conditioning will also be featured. Special lighting effects for atmosphere and balanced illumination, as well as ample circuits and outlets for additional appliances, will be basic requirements.

The contest, announced to coincide with National Electrical Week, February 5-11, will be open until July 3 for entries from members of the OAA practising in Ontario. Awards will be announced late in July, and the winning designs will be on display to the public at the 1961 Canadian National Exhibition, in the Ontario Hydro Building.

The panel of judges includes: George D. Gibson, F.R.A.I.C., the contest's professional advisor: Mrs. Pamela Cluff, M.R.A.I.C., and K. H. Candy, M.R.A.I.C., Ontario Hydro architect.

## MEET YOUR MATCH

*(Continued from page 20)*

slung trays. A maze of twisting belts, up and around and down again, all moving at uniform speed, ensure that the heads dry completely and uniformly.

Once thoroughly dry and ready, they are pushed out of the belt, automatically collected, straightened and packed. And if you've ever wondered why a box of kitchen matches is packed with the bottom half of the heads pointing one way, the top the other, it's because the tightly packed box would bulge on one side if it were not so.

Matches for the smaller pocket-size boxes are produced in a similar manner except that the splints, made from Ottawa Valley poplar, are manufactured by a separate process. The poplar logs are peeled on a veneer lathe, and the resulting sheets are chopped to the right length and thickness on machines capable of producing several million splints per hour. They are fed into the match machine for dipping and packaging.

In making book matches, specially treated paper strips are punched out by a press to resemble long combs. A dipping process similar to that used for wooden matches is used, and they are dried, chopped and automatically stapled in book match covers produced by the company's art and printing departments.

So that, in a nutshell, is the story of the match—a suggestion of the drama and ingenuity which underlie the amazing transition from a great tree to an every-day convenience. ■

**Smiths Falls Hydro veteran**

Smiths Falls lost one of its most popular senior citizens with the death of James D. Grant, in December. He was 93 years of age, and had served as manager of the Smiths Falls H.E.C. for many years.

# OFF THE WIRES



ACCORDING to the Book of Knowledge, quartz is the most common of all minerals. Nearly one-eighth of the earth's surface is made up of this mineral. You might say there's "quartz" of the stuff.

* * *

WELLAND LIONS' CLUB found it pays to have a Hydro representative as a member when it comes to selling light bulbs to help raise funds.

* * *

IN TWO EVENINGS of house-to-house canvassing, M. O. Shepherd, who was recently appointed General Foreman of Welland Hydro-Electric Commission, sold 1,000 bulbs and received first prize as the club's best salesman.

* * *

SIMCOE P.U.C. reports some strange situations during a 30-minute blackout caused by a transformer fuse failure. Patrons of a local hotel quaffed their beverage by candlelight, while cashiers in a large supermarket cranked their cash registers by hand and squinted to read the totals. Warehouse workers patrolled the main floor of a department store as a discouragement to shoplifters.

* * *

LONDON recently marked the 50th anniversary of Hydro service, and among the few persons who observed this important milestone were E. V. Buchanan, retired general manager of London P.U.C., and the utility's retired plant superintendent, S. J. Dawson.

* * *

THE TWO HYDRO VETERANS, whose combined service with London P.U.C. totalled 80 years, paid a visit to the city's No. 1 sub-station and recalled a ceremony 50 years ago when a switch was pulled to bring in power from Niagara. "Jack and I just stood at the back of the room during that ceremony," Mr. Buchanan recalled. "He was 25 and I was 23 at the time."

* * *

BELIEVED to be the only surviving members of the group which witnessed the 1910 inauguration, Mr. Buchanan and Mr. Dawson lunched together after their informal visit to the city's first Hydro transformer station.

* * *

DOUBTLESS they recalled the competition which continued between the newly-formed Hydro Commission and the old London Electric Company until 1917. The old company served the downtown section of London from its steam generating station for seven years after Hydro service was introduced. And, no doubt, the two Hydro colleagues also enjoyed a chuckle or two when they mentioned the now-defunct *London Advertiser,* which scoffed at Sir Adam Beck's prediction that every home would have electric irons and women would use electric curling tongs.

* * *

TWO PUBLISHED ITEMS recently caught our eye, and we think our readers will agree that they represent the ultimate in contrast.

* * *

ONE ARTICLE reported that scents and aromas are going into everything—even books. It soon will be unfashionable to read a western novel which doesn't smell of sagebrush or saddle leather, while housewives will be boasting of their new cookbooks that exude an odor of bread or the smell of seasoning herbs, which probably makes them sneeze.

* * *

THEN WE CAME ACROSS another article which declared that: "There has never been any instrument of human persuasion that can rival the word itself. Civilizations have been founded on words. Men have died for them. The greatest skill in our business is the business of writing."

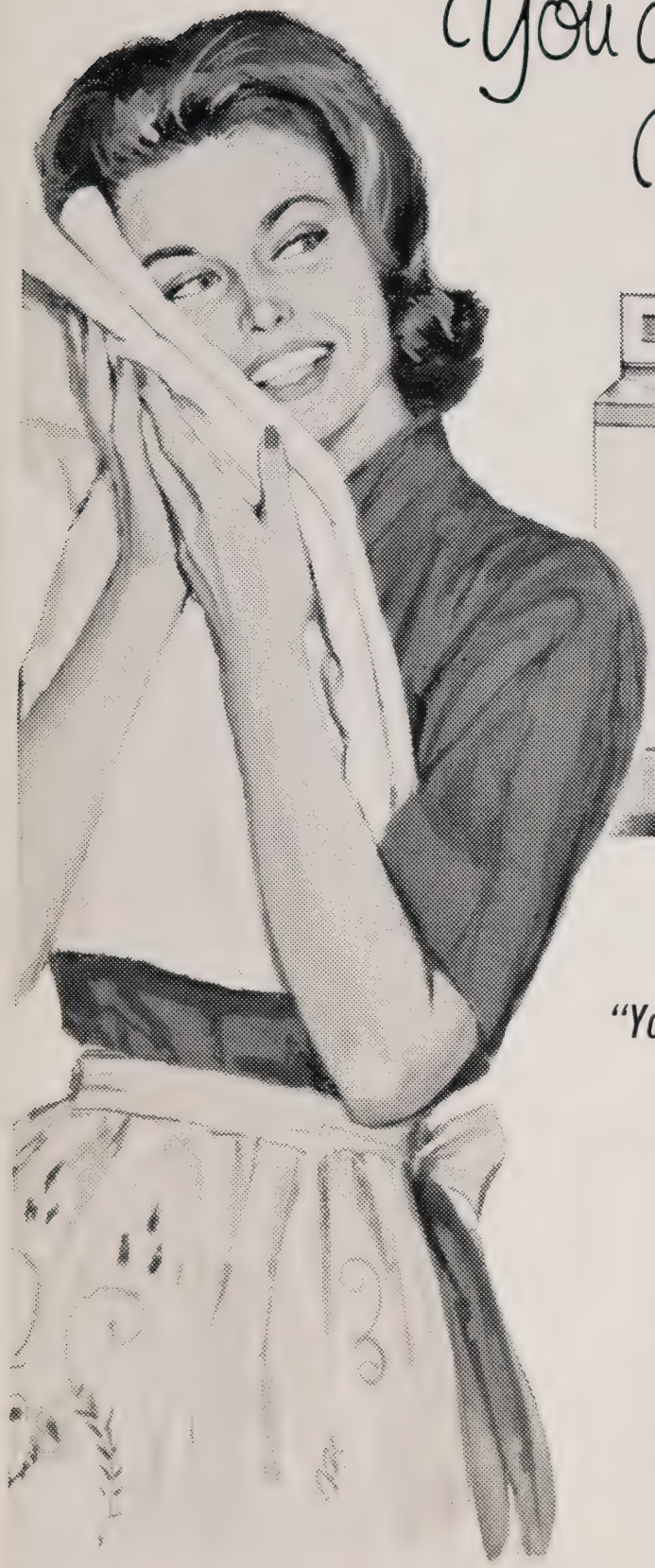
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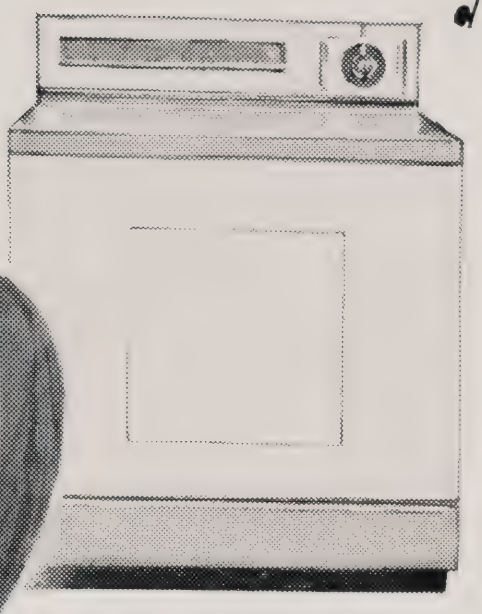
WE AGREE, and would like to point out that the great literature of the world has come down to us unaided by the aroma of Chanel No. 5 or attar of roses.

* * *

WE'D LIKE to apologize to our readers for stapling the 1960 index into the January issue of *Ontario Hydro News,* especially to those readers who have their copies bound at the end of the year. Postal regulations prohibit loose insertion of the index in the magazine. However, extra copies are available to any reader. All you do is drop a note to the Editor and indicate the number of copies required.

# You are my sunshine... My only sunshine...





## *"You make me happy, when skies are grey!"*

Turn on your <u>own</u> washday sunshine, with an electric clothes dryer! Dry a full load for less than five cents. All your pretty "coloreds" come out bright and new-looking. Whites stay white . . . with no clothes-line soil . . . your washing is gently fluff-dried . . . away from wet, windy weather.

For softer drying . . . safer drying . . . drying that keeps your clothes in shape with much less ironing . . . see what's new for you . . . in electric clothes dryers at your dealer's now.

---

(Sample advertisement—mats available to the associated municipal utilities for use in local "Live Better Electrically" campaigns.)





During four years spent in Cornwall, photographing Ontario Hydro's St. Lawrence power development, Harry Wilson took this black and white photo of dredges at work in the St. Lawrence River.

Ted Johnston's winning photo in the recent first Ansco Industrial Awards contest was this photo (front cover) of Hydro's Richard L. Hearn G.S. Both Ted and Harry Wilson have been photographing the Ontario Hydro scene for more than 12 years.





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# ONTARIO HYDRO NEWS

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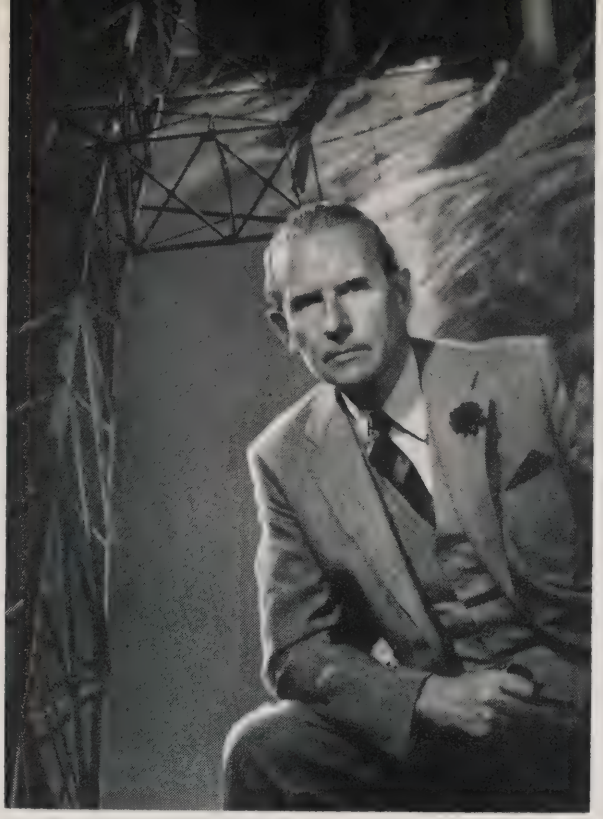
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The editor has his say

## ABOUT THIS MONTH'S COVER

WE asked staff artist John Elphick to design a cover appropriate to the season, and he selected the robin. Don't be discouraged if he hasn't appeared in your neighbourhood yet, for he is a hardy bird, and will not be discouraged by a few feet of snow. We are aware, of course, that no Hydro lineman would stand still long enough to suggest nest building possibilities.

*"James Duncan, I think will be assessed as one of the great, unselfish Canadians who have served our country well."*

—Prime Minister Frost.



JAMES S. DUNCAN

# Ontario Hydro Chairman Resigns

## To be succeeded by W. Ross Strike

THE resignation of Ontario Hydro Chairman James S. Duncan, C.M.G., L.L.D., was announced in the Legislature, March 29, by Prime Minister Leslie Frost.

His successor, who will assume office in May, is W. Ross Strike, First Vice-Chairman, and a member of the Commission since 1944.

Mr. Duncan, who rose from a $9-a-week factory hand to one of Canada's best known executives, guided Ontario Hydro through an important period of its history.

Highlights of his term as Chairman included the completion of the great international power development on the St. Lawrence River, and the increasing emphasis on fuel-burning power plants—such as construction of large conventional coal-burning projects like Lakeview, and the beginning of Canada's first nuclear generating station.

In announcing Mr. Duncan's resignation, Prime Minister Frost said that he accepted it with regret, and he wanted to thank Mr. Duncan for the service he had rendered, "in line with the work of his lifetime, which has been devoted to the development of our country."

When Mr. Duncan assumed the chairmanship, he agreed to do so for a period of three years, the Prime Minister said. At the expiration of this period in 1959 he planned to retire, but was persuaded to continue in office for an additional 18 months.

Mr. Duncan agreed to the extension, despite plans he had made to devote his attention to the international scene, Mr. Frost said.

Mr. Duncan's acceptance of the chairmanship was based upon his conception of public service, the Prime Minister continued.

"This he assumed at a time when he had determined to lay aside many of his more onerous assignments so that he could devote himself in a larger and more general way to matters which, to him, were of great and abiding interest.

"James Duncan, I think, will be assessed as one of the great, unselfish Canadians who have served our country well. . . . He has served our country in peace and in war, and I know that I am expressing the thoughts of our people when I extend to him our heartfelt thanks for this, his most recent service as Chairman of The Hydro-Electric Power Commission. . . ."

Following the announcement, Mr. Duncan said he hoped to carry out plans he had originally formulated after his retirement as President and Chairman of the Board of Massey-Harris-Ferguson Limited in 1956.

He said he has always been interested in the effects of communism on the Western World, and on Canada and its future in particular. He plans an on-the-spot survey of developments in various countries throughout the world, especially those which

*(Continued on inside back cover)*

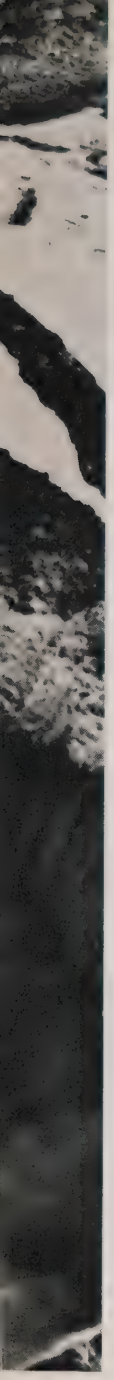


METAMORPHOSIS wrought by winter is suggested by this recent aerial view of the Horseshoe Falls.

## Old-man winter

# ARTIST and VILLAIN

by Don Wright



*Veteran Niagara rivermen still discuss the icing conditions of 1909 and 1938 in hushed tones*

OLD man winter is a spectacular artist, and the Niagara River is one of his favorite subjects. With nothing but low temperatures, high winds and turbulent water he can turn out some of the most weird and beautiful landscapes to be found anywhere in the world.

But he is a poor diplomat, and his efforts to create beauty invariably incur the wrath of Hydro's Operations Division. The two sides are at war again this year, and, in defence of their anti-aesthetic stand, operating personnel point to the havoc winter has wrought on former occasions.

Old-timers still recall the spring of 1909 with considerable horror. In April of that year a gale of hurricane proportions sprang up from the west and broke up the ice on Lake Erie. It continued to blow in that direction for three days, forcing huge quantities of ice down the Niagara River. The wind then did an abrupt turn-about, preventing the ice from escaping to Lake Ontario and causing it to back up all the way from the mouth of the river to the whirlpool. The situation really became serious when a second jam formed—extending from the top of the Whirlpool Rapids to the Falls.

As the water began to rise, it soon became apparent that the Ontario Power Company plant, located near the foot of the Canadian Falls at river level, was in for a bad time. One by one the generators were closed down as the water crept up the tailrace deck and into the generator pits. According to the operator's log it was necessary to restart some of the submerged generators in order to provide power to close the penstock valves.

At the height of the jam, the water rose 40 feet above normal, and power company personnel were forced to vacate the station at the last moment by means of a ladder placed up the elevator shaft. Shortly after their escape, great chunks of ice smashed their way through the windows and flooded the powerhouse floor to a depth of 15 feet. Hummocks of ice in the tailrace area towered 90 feet above the normal river level.

While the water began to recede almost immediately, the damage had been done, and some industry was without power for weeks as the result of the shutdown.

Each generator had to be dried out or rewound before it could be restored to service. Damage was also extensive in the lower gorge, where transmission lines from the same powerhouse were snapped at the river crossing below the whirlpool. Towers were toppled in this section by the action of the ice on the footings.

Winter conditions on the Niagara were more or less normal for almost 30 years after the 1909 debacle. In striving for unusual effects, the artist contented himself with relatively minor ice jams, although on two or three capricious occasions he shut down the flow over the American Falls completely. The Horseshoe Falls, with one brief exception, withstood the winter onslaughts, but, from time to time, their flow has been reduced by almost 50 per cent.

One of the most interesting phenomena associated with winter on the Niagara is the formation of a so-called ice bridge between Prospect Point in the United States and the Maid-Of-The-Mist landing on the Canadian side. No one knows for sure what causes the formation, but it occurs almost every year, and in the good old days it was used as a foot bridge. This practice lost much of its popularity in 1912, when, for no apparent reason, the ice suddenly gave way and three venturesome souls were carried to their deaths in the savage rapids below.

It was not until late in January, 1938, that the unusual conditions associated with the 1909 disaster were again approximated. Operating personnel at the Ontario Power Plant may have viewed the rapidly rising water with somewhat less concern on this occasion because an extra ten feet of protection had been provided by bricking-in the lower part of the powerhouse windows. Any feeling of security was quickly dispelled. As the rising ice approached its former level, all the equipment was closed down and the powerhouse evacuated.

Onlookers watched with awe as the great wall of ice continued to



THIS INCREDIBLE SCENE shows conditions at the Ontario Power Plant after the 1938 debacle. Thousands of tons of ice filled the station almost to the roof and power shovels were used to uncover the generators. Prompt shut-down and ingenious salvage methods minimized damage.



ICE CONDITIONS like this are witnessed only once or twice in a lifetime. Flow over the American Falls has been halted completely. Conditions depicted in lower photo, downstream from the cataracts, are more normal. Ice bridge phenomena occurs most years.



mount. Foot by foot it crept up the powerhouse until, with a shattering roar, it spewed through the windows above the crane track and crashed down on the floor and equipment below. An estimated 7,000 tons of ice filled the station almost to the roof.

It was three months before the first unit could be put back into service, but power reserves were such that no customers suffered. Thanks to the prompt action on the part of the operators in shutting down the generators, damage was minimized and, with the ingenious use of heat and vacuum pumps, Commission engineers were able to dry out the equipment and restore it to service. The picturesque Rainbow Bridge, victor over many a previous bout with the ice, also fell victim to this particular jam and tumbled into the river.

This is the sort of all-out assault of which winter is capable but, for the most part, he fights a sort of harassing action—well calculated to exasperate his opponents with a minimum of casualties.

Ice is not usually a problem at the intakes of the Sir Adam Beck plants. These intakes take water from well below the surface and effectively exclude nearly all the ice. A small amount does get through, and some ice comes in from the Welland River. This is a nuisance, in that it requires that racks be pulled to let it pass through the turbine. Ice will go through turbines, but some pieces of wood or other trash may not and will have to be removed.

In 1925, and again in 1955, ice jams formed in the lower river and backed water up on the Beck plants so as to materially reduce the head. Otherwise no great damage resulted, since the water did not rise high enough to get into the powerhouses.

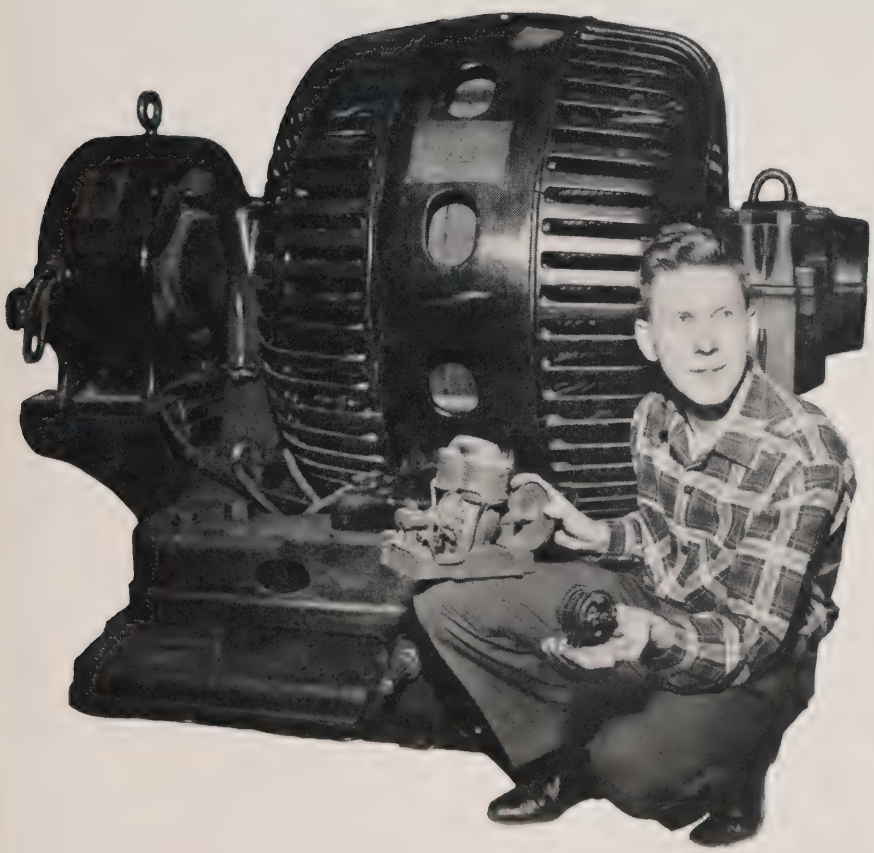
The Ontario Power and Toronto Power plants, which also belong to Hydro, are more vulnerable at both ends. The intakes are

*(Continued on page 21)*

# CURRENT ANTIQUES

## Unique collection of electrical relics has a two-fold purpose — history and education

by Don Wright



SIZE IS NO DETERRENT where Heinz Peper is concerned. Here, he is holding 2 fractional horsepower motors of the 1880's up against an 8-ton synchronous condenser, circa 1909.

Most collectors are able to satisfy their acquisitive natures with stamps or coins or autographs, but these conventional, easy-to-handle items hold little interest for Heinz Peper, live-wire young high school teacher and entrepreneur of Waterloo, Ontario.

His collection favors such elephantine objects as 8-ton generators, massive switchboard panels and carbon-arc street lamps.

After little more than 10 years of serious searching, his trophies tax the resources of two small barns, and Heinz can justify their preservation with a lot more logic than most collectors. To rate saving, a relic must have the following characteristics:

- Employ electricity;
- Represent an important advance in its field;
- Be in suitable condition for restoring to operation.

Many also possess historical significance and are landmarks of the district's electrical progress. Heinz is trying now to fill in the gaps and make each category of his collection progressively modern.

"An item by itself means very little," he explains, "but if I can achieve a step by step progression from the original to the latest, it will greatly enhance the educational value of my collection."

As a teacher of electrical theory and testing at the Kitchener-Waterloo Collegiate Institute, he has been able to prove this point. Demonstrations with authentic apparatus have been infinitely more effective than simple recitations of electrical history.

The lowly light bulb is among the most fascinating facets of the Peper collection. More than 400 of these, each different in some respect, represent every important phase of the painstaking, trial-and-error process which led to the present highly efficient product.

Most highly prized is a carbon filament lamp, with a wooden base



HEINZ, left, owes much of his historical knowledge to pioneer Waterloo electrician Percy Weissgerber. They are shown re-assembling an Edison bi-pole type electric generator rated at 2 horsepower and weighing almost 700 pounds. All items are in operating condition.

and external terminals, which can be traced directly to the laboratory of Thomas Edison. It dates back almost to 1879, when Edison introduced the first practical incandescent bulb. Other stars in this electrical galaxy range from a fully operative carbon-arc street lamp to a tiny bulb designed to be swallowed by patients undergoing medical diagnosis.

Light fixtures garnered from shacks and mansions all the way from London to Toronto provide another interesting glance into the electrical past. Some of the earliest combined electric lights with gas, and were started electrically. A switch operated the gas valve and sparks ignited the flow much after the fashion of a modern oil burner.

"In those days electricity was a rare commodity," Heinz points out, "and, at 10 times the present price, it was used very sparingly. In some cases, gas was switched on when the powerhouse operator blinked the lights to say he was going home."

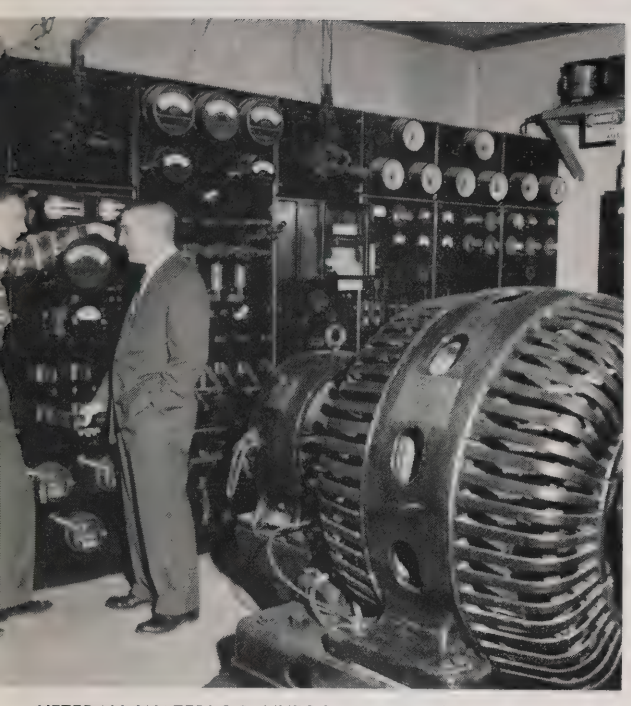
Principles have not changed since Michael Faraday invented the electric motor, but this vital device has undergone a transition as startling as that of the automobile. Many of the major technological advances are represented in Mr. Peper's collection.

His oldest motors, built in the 1880's, are Edison bi-pole types with Gramme ring armatures. Some have hardwood cores and wooden pegs to keep the windings from shifting. All the old-timers are direct current machines.

But the most obvious innovation has been in size. Heinz has an old 2-horsepower motor weighing almost 700 pounds. Another, rated at 3 h.p., outweighs a 10 h.p. motor of later vintage. Heinz ascribes much of this increased efficiency to improved insulation and economy of materials which permit higher operating temperatures with less weight.

Among his favorite historical items is an 8-ton synchronous motor which was part of the original equipment in Waterloo's first electrical plant. Installed in 1909, a year before the advent of Hydro service, it is still in excellent operating condition. Other articles of historical interest include a suspension insulator from Hydro's first 110,000-volt Niagara transmission line and marble switch boards, complete with heavy brass metering equipment, used by the old Kitchener-Waterloo (Berlin) street railway.

This unorthodox collection had its roots in the owner's pursuit of electrical cast-offs for teenage experiments. Heinz did not con-



VETERAN WATERLOO HYDRO superintendent Eby Rush feels right at home with the Peper collection. Much of this equipment came from the P.U.C. plant where Eby worked.




MUCH IN DEMAND for special displays, Heinz is shown here with Waterloo Hydro chairman Howard Scheifele discussing a lamp exhibit. Oldest lamp in display was hand-made in Thomas Edison's laboratory in 1879.

sciously assume the role of historian until he became troubled by the appalling lack of interest he felt existed in preserving the background of the electrical industry. Once launched, the project snowballed—checked only by the twin reins of time and money.

"Both these commodities are in limited supply," he laments, "and a two- or three-ton motor runs into money even as scrap."

Heinz credits himself with a sort of sixth sense which alerts him to the presence of anything worth acquiring. More than once he has stopped his car to bargain for a rare old porch fixture he spotted from the street and ended up by uncovering a treasure trove in the attic or basement. "People are usually very co-operative in this kind of situation," he says, "and seldom reluctant to trade old lamps for new. Others immediately assume that any piece of electrical junk is worth a fortune."

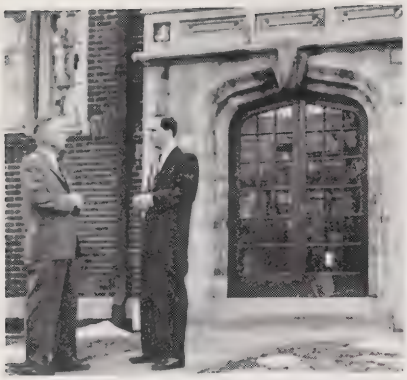
Most of his finds have been made in Southern Ontario, but he has ventured as far afield as Montreal to obtain authentic parts for defective articles. He felt like an ivory hunter in an elephants' graveyard during Ontario Hydro's frequency conversion program, and became a familiar figure combing the salvage piles at the A. W. Manby Service Centre.

"With sufficient funds, I could have equipped a museum," Heinz ruefully reflects, "for the electrical history of Ontario was laid out before me."

A human dynamo himself, Heinz Peper is happiest when the load is heaviest. After a full day in the classroom, he conducts regular evening instruction for school and industry. Finding some time still unaccounted for, he conceived and established Canadian Neutronics Limited two years ago, and he remains as its president and guiding genius. This thriving, six-man operation now manufactures more than 200 items of educational apparatus and furniture for school, science and electrical departments. Its youthful founder admits that his duties are about evenly divided between repairing machinery and planning business policy.

Harking back to his favorite subject, Heinz says, "Someday I hope to have the wherewithal to establish my own museum. Failing this, I would like to see some enterprising organization take over the job and use my collection as a nucleus."

Meanwhile, the search will go on, and he trusts that his growing list of contacts in the public utility field will put him on the scent of further discoveries. ■



# College Without a Campus

Hardy pick-and-shovel "professors" are at work on construction projects across the country.



ROUGH AND READY quarters like these are typical of Frontier College classrooms. Top photo shows Hydro's Archie Graham, former instructor, with Eric Robinson, principal, outside College's new Toronto H.Q.

MANY new Canadians learned to read and write their first proud words of English in a bunkhouse classroom at Hydro's Ear Falls development.

Their teacher was Archie Graham, a laborer like themselves, who had spent the previous three years working and teaching in lumber camps, on railroad gangs and at relief projects across Canada. But he was also a graduate electrical engineer who had been assigned to the camp as a laborer-teacher by Frontier College, in 1936. He joined Hydro's operating staff at Ear Falls the following year, and today he is an assistant project engineer with Hydro's Stations Department.

"Jobs were pretty scarce in 1933," Mr. Graham recalls, "and I became a laborer-teacher because this work happened to be available. But, to



FIRST BRANCH of Frontier College was this rugged log cabin at Spanish River. Photo, taken in 1900, shows College founder Alfred Fitzpatrick, second from left. He received O.B.E. for pioneer work in adult education.



FRONTIER COLLEGE class of '36 lines up for traditional photo at Hydro's Ear Falls project. Laborer-teacher Archie Graham, right, had joined operating staff at time of photo.

make a success of it, I had to become interested in my fellow workers, and I think that anyone becomes a much better person for doing that. What started out as just another job became a worthwhile adventure, and I have retained a lively interest in the affairs of the college to this day."

The guiding principle of Frontier College—that those who teach by night do an honest day's labor as well—was developed shortly after Alfred Fitzpatrick, a young Presbyterian minister, put his unique scheme of adult education into action in 1899. Today, the university students and graduates who become laborer-teachers still consider the pick and shovel their most important assets in winning the friendship and confidence of the men.

Fitzpatrick's right-hand man for many years, and Frontier College's second principal, was Dr. E. W. Bradwin, who devoted his life to the educational welfare of unskilled laborers at projects on the fringes of Canadian civilization.

Following Dr. Bradwin's death in 1954, Eric Robinson, the present principal, was appointed. He has expanded and emphasized the College's program of vocational guidance and pre-trade and pre-technical training which is becoming more and more important to the frontiersman. From headquarters in Toronto, he and his staff send out hundreds of lessons, books, boxes of magazines and material for discussion to all the College's outposts.

Basic English for new Canadians remains the most important subject. Many laborer-teachers also conduct more advance classes, particularly in English, mathematics and mechanics, and, with the help of films, lead discussions on general topics such as safety, health and citizenship.

Hydro has employed laborer-teachers at its camps since 1919, when men went out to Queenston-Chippewa, Cameron Falls and High Falls. Since then, approximately 80 Frontier College "professors" have worked on about 30 of Hydro's construction projects. For the past two years, Frontier College has been represented at Otter Rapids, and, since January, 1961, at Little Long as well.

Although laborer-teachers receive the same rate of pay as their fellow workers, they are not always able to save enough for their next year at university. So that none of its teachers has to make a financial sacrifice, Frontier College has worked out a system of pro-rated bonuses, which ensure that each teacher, regardless of the job he has been assigned, may have, at the end of the season, $600 or $700 to help pay for his education.

The Commission's personnel officers at these projects have had nothing but praise for Frontier College. In the words of the senior personnel officer for Hydro's Construction Division, John Walker: "The Construction Division wholeheartedly supports and appreciates the efforts of Frontier College instructors and the personal effort and enthusiasm of the College's principal, Eric Robinson."

To show its appreciation, the Commission donates $2,500 a year to the College, which is operated to a great extent on aid from large companies which employ laborer-teachers. As well, Hydro provides Frontier College teachers with more suitable classrooms than the bunkhouse at Ear Falls, where Archie Graham taught 25 years ago. Today laborer-teachers usually make good use after-hours of the schoolhouses built for employees' children at the projects. Their very worthwhile efforts are facilitated by project personnel who extend the fullest co-operation.

Last year Frontier College was awarded, as a fitting tribute to its 60 years of success and growth, the Herbert Marshall Tory award "for a distinguished contribution to Canadian adult education." ■

# POWER FOR A FRIENDLY NEIGHBOUR

by Don Carmichael



"THE greatest concentration of power anywhere in the world."

With these words, Ontario Hydro Chairman James S. Duncan summed up hydro-electric power production from the roaring waters of the Niagara River. He was speaking at a special ceremony held February 10 to mark first power at the new Robert Moses Niagara power plant of the Power Authority of the State of New York.

Nelson Rockefeller, Governor of New York State, threw a switch to start up the first of thirteen 150,000-kilowatt generators at the giant project which, together with associated pump-generating facilities, will have an installed capacity of 2,190,000 by 1963. It is almost directly across the narrow river gorge from the two Sir Adam Beck plants of Ontario Hydro. These two plants have a combined dependable peak capacity of 1,811,000 kilowatts.

These installations make the Niagara, though only 35 miles long, one of the great power rivers of the world.

The capacity of the $720 million Power Authority development at Lewiston, N.Y., is greater than that of any hydro-electric plant in North America or the Western World, and enough to supply the electrical needs of a city the size of Chicago.

Next in line is the Grand Coulee Dam on the Columbia River in the State of Washington, with an installed capacity of 1,974,000 kilowatts. Third are the twin powerhouses of Ontario Hydro and the Power Authority on the St. Lawrence, with a combined capacity of 1,800,000 kilowatts.

First power was produced at the new Niagara plant 3 years and 11 days after a construction license was granted by the Federal Power Commission. In 1,107 construction days the work force, which totalled almost 10,000 at its peak, including 600 engineers, brought the project to 85 per cent completion.

The tremendous task involved building 15 temporary bridges to carry highway and railway lines across the power conduits and other construction areas; moving nearly a hundred homes; relocation of highways; and the re-routing of electric power, gas, chemical, sewer and water lines.

Indicative of the size of the job are these approximate figures for material:

39,000,000 cubic yards of rock and overburden excavation; 3,650,000 cubic yards of concrete; 284,000,000 pounds of reinforcing steel; 9,000 tons of dynamite.

Governor Rockefeller said the development could create 6,000 new jobs through industrial expansion on the order of $250 million. He said it would also enhance the natural beauty of the area through



CHARACTERISTICS of the Robert Moses Niagara project is indicated in this aerial. Uncompleted pump-generating reservoir is outlined. Forebay of Sir Adam Beck No. 2 plant is visible, left foreground, across the river.



THIS DRAMATIC NIGHT VIEW testifies to the round-the-clock efforts which brought the Robert Moses project into service in just 3 years. New York State Governor Nelson Rockefeller threw switch, upper left, starting first generator. He is flanked by P.A.S.N.Y. Chairman Robert Moses, left, and James S. Duncan, Chairman of Ontario Hydro.

## Largest hydro-electric development in North America is brought into service on the Niagara.

the accompanying parks and highway program, and thereby attract more tourists.

Located about five miles downstream from the American Falls on the Niagara escarpment, the new plant is fed by two water intakes situated about 2½ miles above the falls. Resembling giant harmonicas, the intakes are each 700 feet long and marked by gate towers nearly 100 feet high.

The water flows through twin underground concrete conduits, 46 feet wide and 66 feet high, which were constructed by the open-cut method through built-up areas for much of their 22,000-foot length.

Construction involved excavating twin ditches, 150 feet deep in places, in which the conduits were built. They were then back-filled to an average depth of about 40 feet. The conduits have straight sides and vaulted roofs with concrete "hinges" for protection against earth and rock movement. They empty into an open power canal, 4,000 feet long, which connects with the forebay of the Robert Moses plant and the forebay of the pump-generating station.

The 1,840-foot-long main powerhouse is wedged into the rocky side of the gorge at the river's edge. Water reaches the turbines through steel penstocks 24 feet in diameter. The arrangement provides an average head of 305 feet — almost double the 167-foot drop of the American Falls.

The generators, largest ever made by an American manufacturer, each weigh 1,094 tons, and are 40 feet in diameter. They will be brought into service at intervals of approximately 35 days.

Set back about three-quarters of



A REDUCED ROLE is in store for this historic plant. Built at turn of the century, Toronto Power was acquired by the Commission in 1922.

# POWER BONUS ENDING

*Ontario Hydro's Niagara operations will be affected by the new plant at Lewiston*

THE START of the first 150,000 kilowatt generator at the Robert Moses Niagara Power Plant—to be followed by 12 identical units over the next year—signals the end of a period during which Ontario Hydro was able to divert a larger than normal portion of the available Niagara River flow into its generating plants.

Under the terms of the 1950 treaty, more water was made available at Niagara for power production. Canada and the United States were allowed to share equally the flow available after allowing 100,000 cubic feet of water a second to go over the falls during the daylight hours of the tourist season, and 50,000 c.f.s. at other times. A provision of the treaty makes any portion of the flow not used by one country available to the other.

Ontario Hydro, through the enlargement of its Niagara facilities with the building of Sir Adam Beck - Niagara Generating Station No. 2, was able to use not only its own full share of the water available but also a portion of the American share.

The collapse of the Schoellkopf plant on the American side of the river in June, 1956, further increased the amount of water available to the Canadian plants, and allowed them to operate closer to maximum capacity than would otherwise be possible.

With the flow now restricted to the Canadian share, Hydro will use as much of the available water as possible through the more efficient Sir Adam Beck plants, and will reduce generation at its Cascade plants—Toronto Power immediately above the Falls and Ontario Power, whose intake is in the Cascades section of the river.

Studies are now under way at the A. W. Manby Service Centre to determine the most efficient method of using the water available to Ontario Hydro after Lewiston comes into full operation. These studies include the possible extension of the Niagara River control structure and other remedial measures which might increase efficiency under the changed conditions. ■

a mile from the river and directly behind the Robert Moses plant, the pump-generating facilities include a dyked, 1,880-acre storage reservoir, capable of holding 20 billion gallons of water. The powerhouse contains 12 reversible pump-turbines.

As pumps, they are able to draw a total of 40,800 cubic feet per second into the reservoir. As turbines, they give the station a rated generating capacity of 240,000 kilowatts. The first of the pump-generating units will be ready for operation about the time the 10th unit at the Robert Moses plant goes on the line.

The project is linked to the St. Lawrence power plant by means of a 300-mile tie-line. This includes two 345,000-volt circuits—highest voltage used in the eastern U.S.—to Rochester, and one to a point north of Utica. This increases the firm capacity of each project, because water flow is greatest in the summer, and the use of Niagara water for power is restricted at that time.

In addition to its vast power output, the new Power Authority project has sparked an extensive redevelopment scheme which is now being carried out along the United States side of the river. Included is a 10-mile scenic parkway along the escarpment, which will pass directly over the Robert Moses powerhouse on two levels. New and enlarged parks and sightseeing facilities are also part of the program, and a new, $20 million international bridge, scheduled for completion in 1962, will span the river between Lewiston and Queenston.

Truly, the latest Niagara development marks the dawn of a new era along an old frontier. ■



# NOW HEAR THIS . . .

## A new paging system at the Richard L. Hearn plant improves penetration of noise barriers.

THE human voice is a paltry thing in comparison with the combined sounds of the giant turbo-generating units in the Richard L. Hearn Generating Station. In certain areas these noises approach the "threshold of pain." Yet engineers have tackled the problem of direct communication in Canada's largest thermal-electric plant with considerable success.

Telephone is the main medium of communication throughout the plant, but, during the critical starting up and load change operations, direct and immediate relaying of instructions to the various operating personnel is vital.

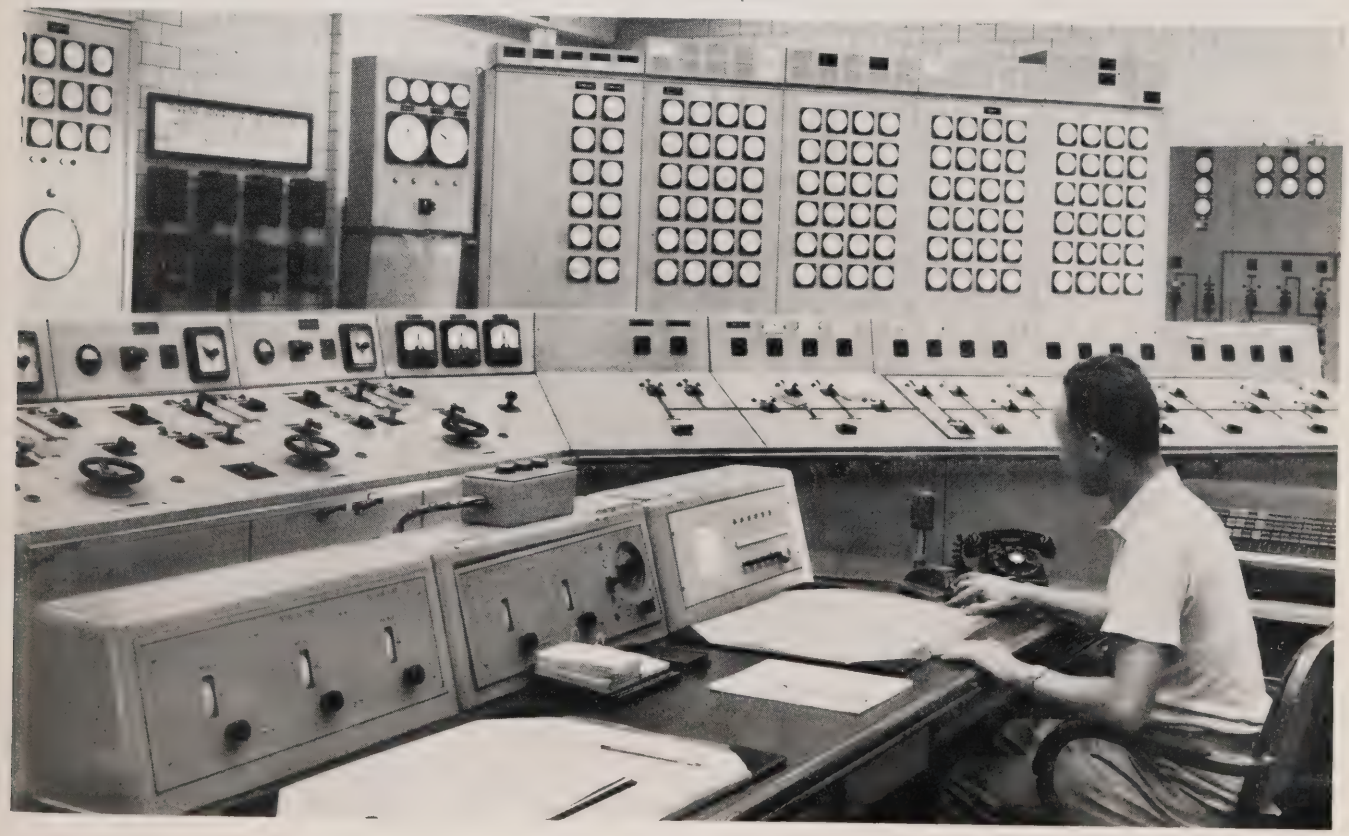
To reach these men above the high noise level, the Bell Telephone Company has installed an improved paging system composed of 16 newly-developed 80-watt amplifiers, 178 loud speakers, and 15 microphone stations from which instructions may be issued to specific areas or to the plant as a whole. Two new developments add to its effectiveness.

It has long been known that higher tones of the human voice tend to cut through noise barriers best, and the new amplifiers in the steam plant have been specially designed to emphasize these higher tones. A more equal distribution of power from the voice has thus been attained, producing greater intelligibility.

Secondly, the system includes a new low-cost limiter circuit within the amplifier which makes it possible to obtain greater sound volume from the loudspeakers without voice distortion. The controls on the pre-emphasis system tend to cut down the low frequency tones and thus increase the intelligibility of the messages.

Assessments to date indicate that the new paging system represents a marked improvement over earlier systems employed in high noise applications. It is another step in the Commission's drive for top efficiency in all of its operations. ■

OPERATOR George Gurwitz is shown calling from central control room of the R. L. Hearn generating station. His instructions can be carried over 178 loud speakers.





MIDST the hubbub of new barn's first auction, Tom Hays singles out the highest bidder.

# BARN RAISING — IN A HURRY

WHEN fire destroyed the renowned sales arena of Hays Limited, cattle importers and auctioneers, at Oakville early this year, Tom Hays, one of the firm's two brother-partners, was on the high seas, heading for a business appointment in South America.

Brother Harry, colorful mayor of Calgary, was, of course, in the west.

Loss of the arena presented the busy Hays brothers with quite a problem. Coming up was the First Annual Dominion A-one Invitational Sale to be held in conjunction with the Annual Holstein Friesian Association meeting in Toronto.

A series of other major cattle sales was also set for the Hays' arena.

Tom Hays postponed his South American business and hustled back to survey the damage. The brothers consulted and quickly came to a decision. Rebuild!

From that moment—only hours after the fire—activity around the Hays' Oakville property was fast, furious and purposeful.

And exactly 17 days after the order to rebuild was given, some 500 prospective cattle buyers thronged into a new, all-steel, electrically-heated sales arena for the scheduled Dominion A-one Invitational Sale.

The main building, measuring 50 by 230 feet, and annex, 40 by 40 feet, are heated by nine 4,000-watt and two 2,000-watt infra-red

radiant heaters to keep both cattle and buyers warm in the severest weather. Erection of the rigid steel-frame building was handled by Steel Building Sales of Cooksville. It features fibre glass insulation in the roof and wood and building board insulation of the galvanized steel sides.

Electric heat was chosen for its economy, ease of installation, and safety. The infra-red heaters focus the heat where required, and keep losses through the air and convection to a minimum. Warmth is produced in the same manner that the sun's rays provide heat in even the coldest weather.

The building has a 400-amp. service for lighting and a 200-amp. heating service.

Recognized as one of North America's largest exporters of pure bred cattle, Hays Ltd. entered the export and sales business following the dispersal of their large Holstein herd at the Canadian National Exhibition coliseum in 1947. They now have a thriving business in pure bred cattle exports to the United States, Central and South America. ■



JOHN MOLES (right), manager of Ontario Hydro's Farm Sales, talks with Herb Rollinson (left), Bronte Electrical contractor; Bert Croll, superintendent of Oakville-Trafalgar P.U.C.; and Wake Wynn, Canadian Marketing Company, who installed heating just prior to the sale. These four were instrumental in getting arena electrically equipped by deadline.

SPLIT-SECOND building and wiring schedule saw power turned on just before first sale. Herb Rollinson and Bert Croll check wiring.






HARRY (left) and Tom Hays (centre) appear pleased with the new arena as the auction gets under way. The brothers are among Canada's best known cattle importers and auctioneers.

# Comfort by the Pumpful

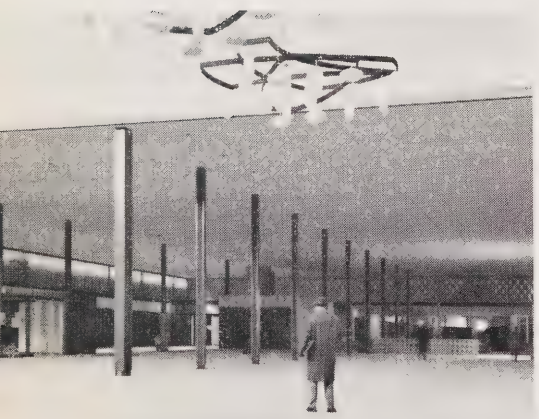
*Air-to-air heat pumps are making their appearance in Ontario and this form of weather-conditioning is sure to command increasing attention as its virtues and shortcomings become more familiar*

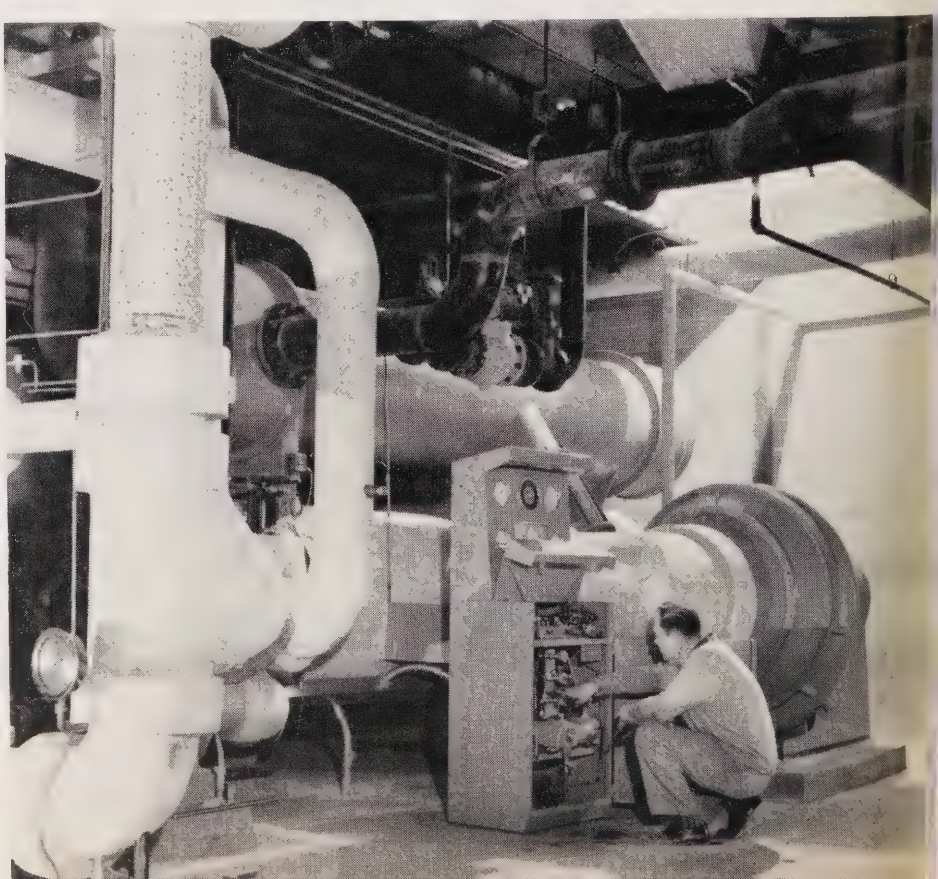
WHENEVER the conversation gets around to electric heating, the subject of heat pumps is sure to be introduced. Air-to-air heat pumps are a particularly hot topic these days since the first Ontario installations have been completed only recently and conclusive performance data are not yet available. Both home owners and commercial establishments are now weighing the results, which may have considerable bearing on the heating methods employed in this province in the future.

Intriguing in their basic simplicity, all heat pumps operate on the same general principle as the domestic refrigerator. This familiar appliance employs the refrigeration cycle to remove heat from the food compartment and release it into the kitchen. The heat pump, operating as an air conditioner, removes the heat from a building and dumps it outside in much the same manner. Heating is achieved by reversing the process—heat extracted from an outside source being released indoors.

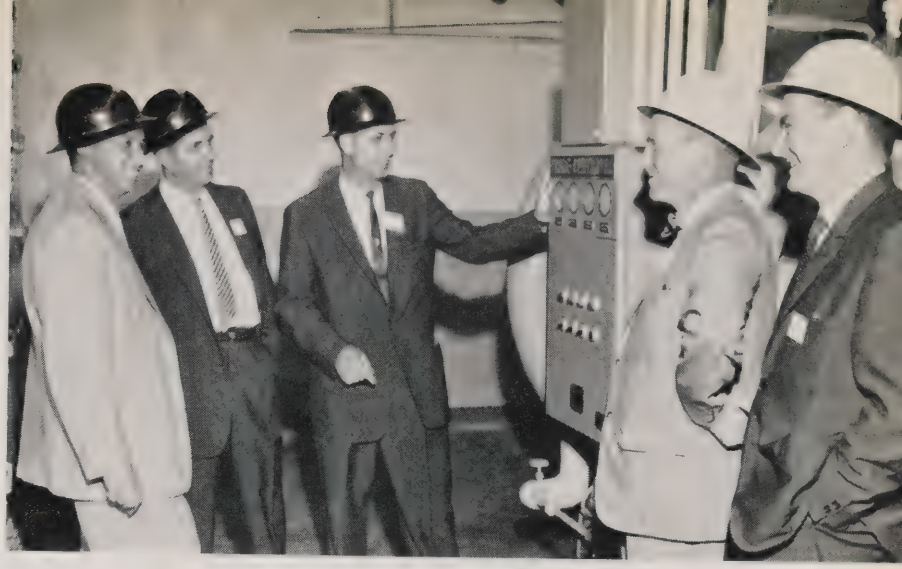
Like the refrigerator, the basic heat pump unit consists of a compressor (pump), evaporator, condenser, refrigerant (gas) and connecting lines. The hot or cold air may be circulated to the various parts of the building by means of fans and ducts very similar to a conventional heating system. Or water may be used with a system of pipes and radiators.

Essentially, heat pumps are electrically-driven compressors which move heat from a lower temperature to a higher one. Their chief





TOP PHOTO shows enclosed mall at Thorncliffe Park which, with some 40 shops, is heated and cooled by inside-air-source heat pump. Supplementary heating is by electric boiler. Heart of the system (right) is a 424-ton-capacity refrigeration machine.



THIS GROUP of Toronto consulting engineers is viewing heat pump installations at Ontario Hydro's St. Lawrence generating station. Warm cooling water from generators is used as the heat source.

advantage over resistance units is that they use less electricity to provide a given amount of heat, and can function as humidifier, air-conditioner and dehumidifier. Heat pumps differ principally in the source from which their heat is derived.

Water from wells, lakes and city mains can be used as external heat source with the advantage of relatively constant temperature. At the Robert H. Saunders - St. Lawrence Generating Station, Ontario Hydro uses a 500 h.p. heat pump to heat and cool the administration building. Warm cooling water from the generators is used as the heat source, as well as heat from within the building, to provide an extremely efficient heating cycle.

Water is not always available, of course, and metered municipal water is often too expensive. The earth is another reliable source of heat at constant temperature, but the cost of the necessary installations is a major drawback.

As a heat source, outside air is one of the most desirable since it is everywhere and may be tapped without expensive installations. Weather-conditioning with air-to-air heat pumps is in high favor in the United States, particularly in the more southerly areas, and it is now making its appearance in Ontario. Such installations are operating in half a dozen homes in southwestern Ontario for the first time this winter, and as many major industrial applications have been made.

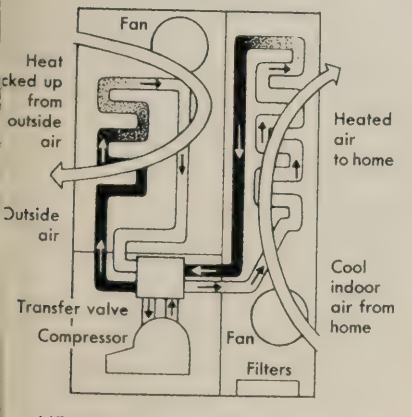
Unfortunately, while heat exists in the air down to absolute zero, which is —459°F., the efficiency of the heat pump cycle decreases very rapidly as the outside air temperature is lowered. Climate, therefore, becomes a major consideration, and supplementary resistance heating is usually required when the outside temperature approaches the freezing point and outside air is the only heat source.

The amount of energy expended on supplementary resistance heating is, of course, an important economic consideration, and it is still too early to assess the usefulness of the air-to-air heat pump for domestic purposes in this province.

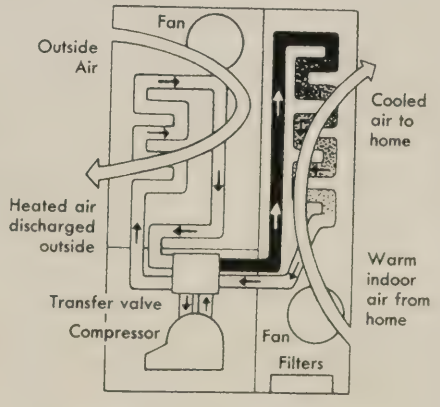
Commercial and industrial installations enjoy a big advantage in that they can often make use of waste heat from within the building to augment the basic heat source. Crowds in shopping centers, industrial machinery, restaurant cooking and lighting are all valuable heat sources. This heat can be utilized by installing heat exchangers in the exhaust system to extract heat from the stale air before it is discharged outdoors, or this heat can be absorbed and recirculated by an inside-air-source heat pump.

In some cases there is enough waste heat so that the heat pump

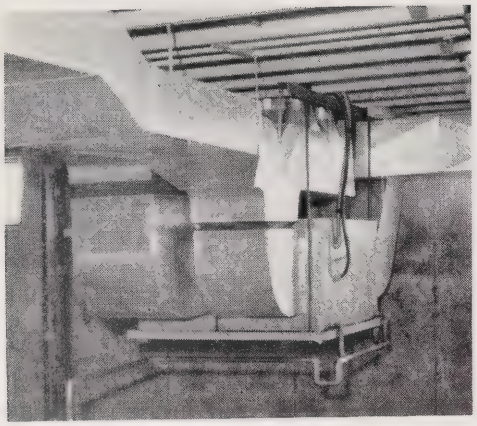
## The basic heating and cooling cycles




HEATING—electric heat pump collects heat from outside air (even in zero temperatures) and releases it at a higher temperature inside the building.




COOLING—by reversing operation of the same unit, building is cooled. Inside heat is dumped outside on the principle of the domestic refrigerator.





THIS HOME at St. Catharines is completely air-conditioned with an air-to-air heat pump. Operating data are being recorded by Ontario Hydro. Compact heat pump installation is shown (left) in basement.

can satisfy all daytime requirements even at minimum outdoor temperatures. Night heating can then be accomplished with resistance heating at off-peak power rates.

Studies indicate that, where an efficient heat pump cycle can be achieved, the air-to-air heat pump deserves serious consideration. This is particularly so where most of the initial cost can be covered in furnishing a summer air-conditioning plant. Like most types of electrical heating, the heat pump enjoys an edge over other methods from the point of view of operating and maintenance costs. Lack of air pollution is another important advantage, particularly in dense industrial areas.

As with the more conventional forms of electrical heating, the municipal hydro utilities have been leaders in the use of the heat pump.

One of the largest of these installations is in the new $2½ million Toronto Hydro service centre now nearing completion. While several types of electrical heating equipment have been utilized, the heat pump is the primary method used to heat and cool the 20,000-square-foot meter department and general office area.

The heat pump comprises a central station fan unit, filters, humidifiers and zoning dampers incorporating water coils through which chilled water will be circulated in the summer and hot water during the heating season. A condensing unit of 100-ton capacity will provide the hot and chilled water requirements.

During the summer cycle, the condenser will be connected to a cooling tower and operate as a normal water exchange type air conditioner.

Because of air contamination in the 150 vehicle garage, it will be necessary to discharge large quantities of warm air outdoors. In winter, this heat will be reclaimed by exhausting the entire garage volume through cooling coils chilled by means of the heat pump condensing unit. The heat pump will extract 1,000,000 b.t.u.'s per hour from the exhaust system with an expenditure of 300,000 b.t.u.'s per hour of electric power to drive the pump. This reclaimed heat, all of which would normally be lost, will be re-circulated by means of a duct type system.

The new service building will provide 160,000 square feet of floor space, and the total heating load has been estimated at 2,500 kilowatts.

Year round weather-conditioning has been provided in the control room at Etobicoke Hydro's new $570,000 service centre by means of direct air-to-air heat pumps. Twin, 11-kilowatt units draw air from outside the building. It is cleaned by electronic filters, heated, and distributed by a system of air ducts. Forty-five kilowatts of supplementary resistance heating has been installed in the ducts.

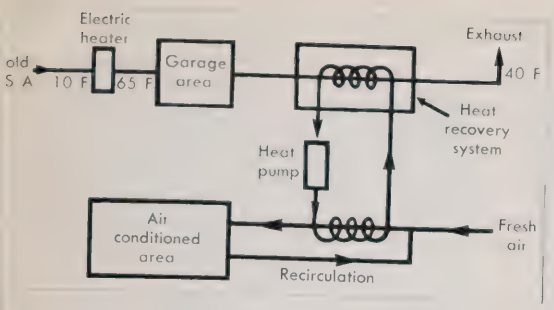
Summer cooling is achieved by reversing the heat pump cycle. The cooling cycle is particularly important because the 5,000-square-foot control room is windowless, and considerable heat is generated by the high level of illumination and by the electric control equipment. These heat sources reduce the heat requirements during the cold months.

Heated entirely by electricity, the Etobicoke centre has a total heating load estimated at 950 kilowatts.

Among the smaller utilities, the Port Hope H.E.C. recently installed two air-to-air heat pumps when its headquarters were renovated. Supplementary resistance heating units totalling 30 kilowatts were installed in the air ducts.

With the winter's operation nearing completion, Port Hope officials are pleased with the results. The average daily heating load from September to March has been 98.4 kilowatt-hours. The building has a floor area of 2,600 feet on two levels and is not completely insulated.

*(Continued on page 21)*

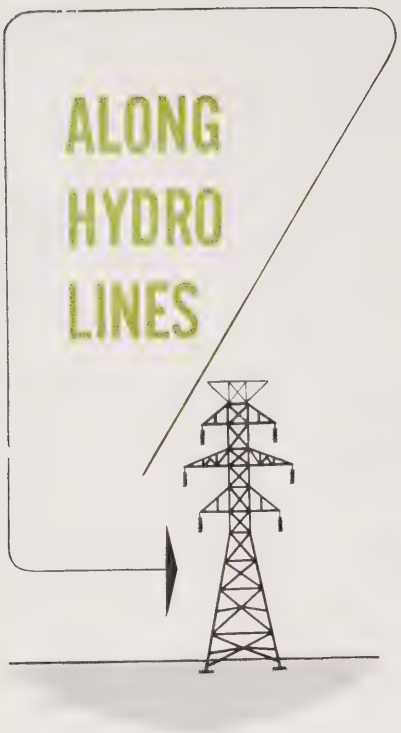



THIS NEW $2½ million Toronto Hydro service centre, nearing completion, will be entirely electrically heated. Heat pump is primary method employed to heat meter and office area. The basic heat pump diagram is shown above.



ATTRACTIVE new Etobicoke Township service centre, below, is electrically heated. Control room is weather-conditioned by heat pump.






### P.U.C. veteran dies at Thornbury

Mathew Joseph Dillon, 82, a former reeve of Thornbury and superintendent of the P.U.C. for nearly 30 years, died recently at his home. Mr. Dillon had also been a member of the commission for 25 years, and served for several terms as chairman. He had been retired less than two years.

Among the survivors are his sons Cecil, former National Hockey League star, and Earl, manager of Ontario Hydro's North Bay Area. He is also survived by his wife and two daughters.

### Hydro engineer dies at Port Arthur

Eric R. Martyn, former consumer service engineer of Ontario Hydro's Northwestern Region, died recently in Port Arthur. He had served with the Commission for 31 years prior to his retirement in 1956.

Born in Ripley, Ontario, Mr. Martyn had resided in Port Arthur for 12 years. Among the survivors are his wife, Edna, and one daughter.

## LONG SERVICE HONORS



ORVILLE HILL



C. J. MALONE

RETIREMENT and long service honors have recently been accorded utility veterans in London, Oakville, Woodstock and Stratford.

A dinner was held in London to mark the retirement of Charles J. Malone, personnel manager, who served with the P.U.C. for 41 years. The event also served as a farewell gesture to Chairman J. Stewart Killingsworth and Commissioner Earl Nichols, who left the Commission at the end of the year.

Mr. Killingsworth presented the retiring personnel manager with a travelling case.

At Oakville, fellow P.U.C. employees honored Ben G. Languay, who retired after 38 years' service. It was recalled, at the get-together, that only two linemen were on the staff when Mr. Languay joined in 1922. At retirement he was a stockkeeper for the greatly enlarged Oakville-Trafalgar utility, born through amalgamation during the summer of 1960.

Orville Hill received a purse of money from fellow employees of the Stratford P.U.C. upon his retirement after 21 years of service. He entered the Water Works Department in 1939, and later worked as an operator and a meter reader.

Presentation of a 25-year service award to H. F. Parker was a feature of the annual dinner of the Woodstock P.U.C. Assistant manager Glen Sanderson received safety awards on behalf of the light and water departments for achieving a non-compensable accident record during 1959. ■

### Building reflects progress

Reflecting a continued growth in the demand for electrical services, three utilities have recently announced plans for new offices and service facilities.

The Burlington P.U.C. has purchased a 13-acre property, and plans to erect a new administration building and service centre. It is expected that the service centre will be complete within the year.

Cost of a new $28,000 office building to be erected by the Dunnville P.U.C. will be shared equally by the electrical and water departments. The Commission presently occupies rented premises in the town hall.

A combined office building, garage and storeroom will be built by the Wasaga Beach H.E.C. on property acquired for this purpose a few years ago. It is scheduled for completion by April 30. The electrically-heated building will cost $12,000.

### Beachburg appoints H.E.C.

Beachburg became a cost contract municipality, January 1, and its first hydro commission was appointed at the inaugural meeting.

Mrs. Denzil Rollins was named chairman. Others appointed were Reeve T. S. Harris, W. A. Burnett, Arthur Griese and B. W. Ross. Mrs. George K. Stevenson is secretary.

Ontario Hydro representatives were present in an advisory capacity.

### ARTIST AND VILLAIN

*(Continued from page 4)*

located close to the brink of the Horseshoe Falls in the fast and shallow section of the river known as the Cascades. Ice jams here can greatly reduce the flow through the plants with consequent loss of generation. Ice build-up in the river below the Falls creates problems at the other end by raising the tailrace levels and reducing the operating head at both plants.

Under these conditions, perhaps, the operators can be excused if they look with a jaundiced eye on the icy wonderland of Niagara. Last year was remarkable for its benevolence. With the absence of high winds in the spring, the ice simply melted away on Lake Erie.

But no one knows what the weatherman has in store from year to year. ■

### COMFORT BY THE PUMPFUL

*(Continued from page 19)*

The largest heat pump installation of its kind in Canada has been installed in the Thorncliffe Park development in Metropolitan Toronto. Thorncliffe market place is a new concept in Canadian shopping centres, and it is the first to be electrically heated.

Rapidly nearing completion, the 160,000-square-foot market place includes more than 40 shops facing a central, enclosed mall. The whole will be heated and cooled through a central, inside-air-source, heat pump and air-conditioning system utilizing an electric boiler for supplementary and emergency heat.

The heat pump is a 424-ton capacity centrifugal refrigeration machine which will operate year round to produce chilled water to absorb heat generated within the retail areas. The condenser water used to remove the heat from the refrigeration plant will be available, along with the staged, 2,000-kilowatt electric boiler, to automatically control the building heat losses.

Some 24 single and multi-zone air conditioning units will accept the chilled and condenser water to provide automatic temperature control of shops and arcade.

These are some of the more interesting heat pump installations in Ontario. Still almost a novelty in this country, the heat pump may eventually prove to be one of the most adaptable and efficient types of electric heating equipment for a number of applications. ■



## Lighting Program

MIMICO P.U.C. representatives are proud of their new "leading lights"—or Shielded Optical Assemblies, to use the technical term—being installed on several local streets. Watching installation of one of the new fixtures by Hermann Waxl, lineman, and Don Foreman, line foreman, are (left to right): Chairman Amos Waites, Superintendent Fred Carter and Vice-Chairman James Edmond. ■

### Brockville loses former P.U.C. chairman

Brockville lost one of its most public-spirited citizens with the recent death of Henry Walter. He was 80.

Mr. Walter served with the Brockville P.U.C. for 23 years, including six terms as chairman. Born in Mountain Township, he is survived by his widow and a son, Merrill.

### Chief Thunder-Fire

Sarnia hydro commissioner John T. Barnes recently donned his war bonnet, but the hatchet remained buried. It was all part of the ceremonies at which he was made an honorary chief of the Chippewas, of the Sarnia Indian Band.

He was named "Nim Kee-Sko Da-Ceh-Ma," which means "Chief Thunder-Fire" or the "Lightning Chief," in recognition of his long hydro association and his interest in Indian affairs. Mr. Barnes is at present endeavoring to have an Indian museum or village established at Sarnia to help perpetuate the traditions and folklore of the surrounding Chippewa tribes.

The new chief is said to have distinguished himself in the ceremonial dance which concluded the ceremony.

Post Script: At the inaugural meeting of the Sarnia Commission,



INAUGURAL meeting of Sarnia H.E.C. elected E. W. Allen, left, Chairman. He is receiving "peace pipe" from Chief Thunder-Fire.

Mr. Barnes presented Chairman E. W. Allen with a pipe-of-piece as a token of friendship between the Indians and the Sarnia Commission. He said the gesture was intended to include Ontario Hydro.




## Emergency Airlift

A HORSE teamed with a helicopter to restore power when the submarine cable supplying Sans Souci Island in Georgian Bay failed recently.

Unable to effect immediate repairs, Ontario Hydro dispatched two 10-kilowatt emergency generators to the island in its big Sikorsky helicopter. The machine was met at the shore by a horse-drawn sleigh, and the Parry Sound Area crew soon had power restored to the 23 customers on Sans Souci and neighbouring islands.

Grinding ice is thought to have caused the fault in the 2,000-foot cable. ■

### Setting the example

Re-phrasing the popular "Do It Now" slogan of the campaign to create jobs in off-season periods, Lindsay H.E.C. had this sign erected at the site of a new construction project. The Lindsay utility is adding some 2,600 square feet to its garage and warehouse




facilities—a job which qualifies for subsidy under the winter works program. Shown in the photograph are John Stone (left), who is supervising construction, and Lorne Magee.

### William Crombie dies at Toronto

One of Ontario's leading hydro-electric engineers and railway consultants, William B. Crombie, died



WILLIAM B. CROMBIE

recently in Toronto. During half a century of engineering he supervised the construction of several major northern projects. He retired in 1957 as a consultant for



ALL BUT TWO of this large but youthful group have been with Toronto Hydro for 40 years. Remarkably, 52 members of the staff attained 40 years' service in 1960, while only two joined the ranks of the Quarter Century Club.



NEW 25-year men were scarce this year. The two are shown, seated. From the left: Bertrand Merson, Wilson Little, J. Barton Sherring and John McMechan.

## A PROUD TORONTO FAMILY

"No other family in the city of Toronto is a better family than the 1,650 employees of Toronto Hydro," Bert Merson said proudly at the 33rd annual banquet of the System's Quarter Century Club.

The chairman of Toronto Hydro congratulated two new members of the Quarter Century Club—Wilson A. Little and J. Barton Sherring—and 52 members who attained 40 years' service in 1960.

"We look to these older members of our family for guidance and leadership," Mr. Merson said. "I like coming to these banquets every year to meet the men and women who made the System."

John McMechan, vice chairman of Toronto Hydro, and Harry Hyde, general manager and chief engineer, added their congratulations to the new 25-year and 40-year service members. They expressed their hope that the friendly get-togethers would continue for many years.

In congratulating the long-service members, McDonald White, assistant general manager, paid special tribute to James Redsell, oldest retired member of the Quarter Century Club. A pensioner for more than 22 years, Mr. Redsell joined Toronto Hydro in 1912, and retired in 1938 as a construction foreman after 26 years of service.

"The Redsells are a real Hydro family," Mr. White said. "Mr. Redsell's son, Jim, will complete 40 years of service with Toronto Hydro next year, and his grandson, Bill, has been with the System 14 years." ■

---

Ontario Hydro on railroad relocation for the St. Lawrence Power Project.

Born in Picton, Ontario, Mr. Crombie began his career in 1907 as an engineer with the Temiskaming and Northern Ontario Railway. While working for George F. Hardy, consulting engineers, he was responsible for the construction of four major hydro-electric developments in north-eastern Ontario, including the Abitibi Canyon Generating Station.

With Ontario Hydro, Mr. Crombie was chief resident engineer and general superintendent of construction on the Ogoki River diversion. In 1945 he was resident engineer for the Stewartville development on the Madawaska River. Between 1948 and 1952 he was project manager at the Otto Holden project on the Ottawa River.

Mr. Crombie leaves two sons, Guy and William; two brothers and three sisters.

### P.U.C. retirements end 124 years' service

Three utility veterans with a total of 124 years' service retired recently at Sarnia, Paris and Campbellford.

Longest service record belongs to J. F. McGregor of the Campbellford P.U.C. Mr. McGregor started as an assistant to his father more than 50 years ago, when the Water and Light Department was a committee of Council. He was secretary of the Campbellford utility at his retirement.

Sarnia Hydro lost a line superintendent with 43 years' service when Stan McNeil retired recently. Mr. McNeil joined the utility as a lineman in 1917, and he was appointed line superintendent in 1941. He plans to continue with the Sarnia utility on a part-time basis after a long holiday.

Clarence A. Veigel, secretary-treasurer of the Paris P.U.C. for the past 31 years, has also retired. He has been succeeded by Norman Watts, formerly of Penmans Limited.




## Management Changes at York Twp. Hydro

EXPANSION and retirement were responsible for a recent management re-alignment at the York Township Hydro System.

After 20 years of service as general manager and chief engineer, H. R. McClymont has retired. He will continue in a consulting capacity. He had managed the York Township Hydro System from the time it was established in 1941.

Mr. McClymont has been succeeded as general manager by Donald MacGillivray, formerly administrative assistant to the general manager. Mr. MacGillivray joined the York Township System in 1941 as a draftsman.

Due to expansion and the increasing complexity of its operations, the administrative and engineering functions of the utility have been separated. William Orton has been named assistant general manager, and Albert Healey, formerly with the Brazilian Traction Company, is chief engineer.

Other changes include the appointment of Gordon Robertson as public relations officer.

Shown in the photograph, from the left, are William Orton, Donald MacGillivray, and Albert Healey. ■

## Line Crews Aid Quebec

ONTARIO HYDRO line crews from as far west as Toronto and Niagara Falls answered urgent calls for assistance by three Quebec utilities following a recent ice storm which disrupted power services for as long as two weeks.

Most of the crews were dispatched from the Eastern Region, but others were sent from the Central, East Central and Niagara Regions. A crew under foreman Swede Widmeyer was sent from the Construction Division in Toronto. A total of 85 linemen and helpers with equipment and trucks were sent out by Ontario Hydro.

Montreal, Dorion and Valleyfield were hardest hit. Requests for aid were received from Quebec Hydro, the Shawinigan Power Company, and the Gatineau Power Company. ■

### Hydro manager dies in Belleville

Thomas H. Gibbon, Manager of Ontario Hydro's East Central Region, died March 6, in Belleville. He was 64.

Born and educated in Durham, England, Mr. Gibbon articled with an electrical engineering and construction firm in that city. During World War I he served in France with the Royal Engineers and, for a short period, with the Royal Air Force.

Mr. Gibbon came to Canada and joined Ontario Hydro in 1921. During his 39 years with Ontario Hydro he served in a number of



THOMAS H. GIBBON

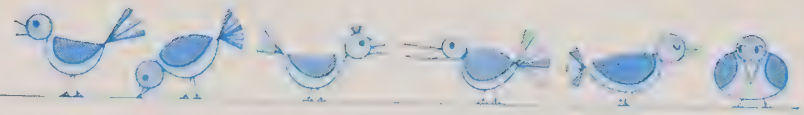
engineering positions with the Operations Division. He was appointed operations engineer for East Central Region in 1947.

Mr. Gibbon was named Manager of the Region last April.

East Central Region covers 10,000 square miles extending along Lake Ontario from slightly west of Port Hope to Gananoque, and north to the southern boundary of Algonquin Park. The Region contains 31 municipal utilities and 13 rural operating areas, serving about 140,000 customers.

Mr. Gibbon is survived by his wife, a son and three daughters.

# OFF THE WIRES



OUR APPRECIATION to a number of readers who have expressed great interest in our article, "The Miracles of Edison," in the January issue this year.

* * *

HOWEVER, one British Columbia reader claims we made an error in our reference to one of Edison's famed colleagues, Steinmetz, whose first name, we believed, was Hugo.

* * *

OUR CORRESPONDENT, who appears to be an authority on the 20th Century genius, claims that his name was Charles Proteus Steinmetz. The name, Charles, is believed to have been originally Karl when Steinmetz was a young firebrand in Berlin, Germany, where he was once jailed for political sedition. The second name, Proteus, according to our informant, is said to have been his nickname for himself to indicate his many-sided personality.

* * *

PUBLICATION of the article also brought to light the fact that Everett Drake, a member of Ontario Hydro's Hydraulic Generation staff, is a cousin of Edison. Drake is collecting data on the famous family.

* * *

JUST ONE concluding comment on Edison. We hear a lot about the shorter work week these times. Ironically enough, while many of Edison's labor-saving inventions probably had an impact on making our present working conditions possible, he certainly wasn't a personal advocate of shorter hours. In fact, a few years before his death, he once observed: "I am glad that the eight-hour day had not been invented when I was a young man. If my life had been made up of eight-hour days, I do not believe I could have accomplished a great deal.

"This country could not amount to as much as it does if the young men of 50 years ago had been afraid that they might earn more than they were paid for." 'Nuff said!

* * *

WE SUPPOSE it's the price of progress, but couldn't the dear old Bell Telephone Company have found some alternative to the introduction of All Number Calling which will be introduced in Toronto in April? It's hard enough to remember five digits with their alphabetical prefix, let alone eight numbers.

* * *

INCIDENTALLY, Ontario Hydro will be one of the first subscribers to be affected by the change. Instead of calling EMpire 8-6767 you will have to call 368-6767. And if you want to reach Head Office by Direct Distance Dialling, you'll have to use the Area Code Number, 416.

* * *

OUR CONGRATULATIONS to the Port Elgin Hydro-Electric Commission for their full-page advertisement in a recent issue of the *Port Elgin Times* explaining the questions and purposes of a customer survey they are making in that community to determine the number of appliances each customer is using and how they can best and most readily improve Hydro services. Judging by this evidence, the Port Elgin Commission is certainly keeping on its toes. ■

## ONTARIO HYDRO CHAIRMAN RESIGNS

*(Continued from page 1)*

have recently obtained independence. He said he would make these visits as a businessman, with no official affiliations.

Mr. Duncan, who will be 68 in May, said he does not plan to "retire," but hopes to remain active. His immediate plans include a two-month cruise of the Adriatic.

Mr. Strike, 65, has almost three decades of experience in the electrical utility field. He was appointed a Commissioner of Ontario Hydro in 1944 while president of the Ontario Municipal Electric Association, and was named First Vice-Chairman in 1956.

He first entered public life in 1932 as mayor of Bowmanville, and since that year he has been a member of the Bowmanville Public Utilities Commission.

Announcing the appointment, Mr. Frost said:

"Mr. Strike is a man of great experience, fine personality and good judgment, and I am sure, as Chairman of the Commission, he will carry on the traditions of service and development which commenced with the first chairman, Sir Adam Beck." ■

**Editor's note:** *Mr. Strike is well known by most readers of Ontario Hydro News for his vigorous and constant efforts on behalf of the power consumers of Ontario over the years. His views and achievements will be reviewed in the next issue of this magazine.*




# THE NEW TWO-ELEMENT ELECTRIC WATER HEATER

## FOR KING-SIZE USERS OF HOT WATER!

This is the new fast-recovery water heater that guarantees constant and dependable hot water service *far beyond* the call of ordinary household duty!

If your family are *heavy users* of hot water, this is the water heater for you!

A 3000-watt top element plus a 1000-watt bottom element in a 40-gallon tank guarantees fast recovery to give you ALL the hot water you'll ever need!

And with low Hydro flat rates, you just can't find a more economical way to enjoy hot water satisfaction.

**HYDRO is yours**

---

(Adaptation of an advertisement, mats of which are available to the associated municipal utilities for use in local "Live Better Electrically" campaigns.)

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## ABOUT THIS MONTH'S COVER

WE think Ontario Hydro photographer Mern Ritz has captured the spirit of springtime with this fine study of daffodils. Long the favorite of poets, these flowers add colour to the capital scene before the tulips bloom (see page 12).

# New Managerial Concepts

ADDRESSING delegates during this year's O.M.E.A.-A.M.E.U. joint annual meetings, W. Ross Strike, Ontario Hydro's new "chairman-elect", asked the interesting question: "Are we in the public utility field changing with the times?"

As many of the more senior utility managers are fully aware, their responsibilities and obligations have changed drastically in the last decade. In the case of the larger utilities at least, the managers are no longer expected to have an intimate knowledge of the trades represented by the various members of their staffs. For these people are now being given opportunities to keep abreast of the best methods of carrying out their individual jobs. Their increased efficiency, in most cases, has relieved the manager of being a "jack-of-all-trades" and of supervising every detail of the day-to-day operations of the utility.

This is extremely fortunate, for the manager has, to an increasing degree, found himself faced with many new problems imposed mainly by higher wages, higher material costs, increased interest rates, competition from other sources of energy, and many other complicated factors. This has made it necessary for the manager to ensure that the utility, as a whole, is making every effort to keep its operating costs and its rates as low as possible, at the same time maintaining a high calibre of service to its customers.

Therefore, he must make certain that all departments of the utility adhere strictly to the annual financial budget. He must also concern himself with the development, wherever possible, of new and imaginative measures to reduce costs and to improve production.

Most utility managers also find themselves in the position today of having to do some constructive thinking about load building—in other words promoting the sale of electrical appliances and equipment both through the utility and in co-operation with other local allies in the electrical field, such as contractors and dealers.

Then, too, utility managers must devote a portion of their time to the fostering of better employee relations, which, in most instances, can be one of the most effective means of engendering better relations with utility customers and the public generally.

These are just a few of the tasks which the utility manager encounters today. Undoubtedly they are, at times, challenging and sometimes rather disheartening. But there are few men engaged in this important phase of public service who do not agree that the job of the utility manager has never been more stimulating or interesting. ■



OUR MARCH COVER featured a mixed-up robin on a lineman's hard hat looking for a place to nest. Obviously he made out all right, for here is the next generation. He worked fast on the theory that the early bird gets the worm.

# London Goes Underground



TYPICAL RESIDENTIAL STREET in London's new Oakridge Park indicating how attractive a street can be minus overhead utility structures and wires.

*Based on a paper by C. J. Moull, P.Eng., Distribution Engineer, Western Region*

THERE is an increasing interest in residential underground distribution systems.

That is the opinion of C. J. Moull, distribution engineer for Ontario Hydro's Western Region, who believes that an increasing number of subdividers and new home-owners will be willing to pay slightly more to offset the additional cost involved in order to gain all the physical and aesthetic advantages of buried utility services.

Mr. Moull's view is based on his experience in supervising the installation of a complete underground electric distribution system at Oakridge Park, a new 423-lot residential subdivision now located within the recently enlarged boundaries of London, Ontario.

Keen interest in Ontario Hydro's first major underground system was manifested by members of the Canadian Electrical Association during an Eastern Zone meeting at Halifax, N.S., in January this year where Mr. Moull was one of the principal speakers.

As he pointed out, this 200-acre subdivision will also contain an 18-room electrically-heated school, a church, apartment blocks and commercial establishments. Although the initial development comprises only 185 lots in the westerly section of the subdivision, there is a potential of 1,000 additional homes in the immediate vicinity.

Oakridge Park is on relatively high ground, and has been laid out to gain the maximum advantage of the slightly rolling terrain and beautiful groves of trees. The average lot has 75-foot frontage and is 140 feet deep. Since most streets and park areas are curvilinear, lot sizes vary considerably. Prices of homes are in the range from $18,000 to $50,000. Although the subdivider builds some homes, the majority are built by other contractors on a custom-order basis. To enhance the appearance of the subdivision, and save many of the fine trees in the area, Ontario Hydro and the communication suppliers (telephone and coaxial cable for piped-in television service) were requested to bury their distribution facilities.

In recent years, service to subdivisions of this type has been provided by overhead rear lot construction, the poles being used jointly with the telephone company. Normal policy would have required the subdivider to pay the difference between overhead and the full cost of the underground system. In the case of Oakridge Park, a new plan was developed to include the extra cost in the purchase price of each lot and rebate this amount to either the home owner or contractor when the installation of electrical appliances in the home met the original standards established by the Electric Service League of Ontario for Bronze and Gold Medallion Homes.

Under the Oakridge Park rebate scheme, a Bronze Medallion Home



CABLE-LAYING OPERATION, where no road crossings were involved, was one of the simplest operations of the whole project. The tractor merely backed up with the reel on the front, and the men could then readily place the cable in the foot-wide trench.



LOWERING a kiosk into place using the versatile tractor again. In bush locations such as this, the tractor had to haul in all the material, even wet concrete, as it was impossible for cement trucks to gain access to such confined locations.




WESTERN REGION'S Distribution Engineer, C. J. Moull, points to a typical kiosk in Oakridge Park which holds the transformer.

containing any two of an electric range, electric dryer or water heater will qualify for $50; a Gold Medallion Home, equipped with electric range, dryer and water heater is eligible for $100 refund, while any Bronze or Gold Medallion Home, in which electric home heating is installed will qualify for an additional $100 rebate.

In general, the distribution system is direct buried along rear lot lines in a trench 12 inches wide by 36 inches deep and across roads in black fibre duct located in a trench 12 inches wide and 42 inches deep. When completed, there will be three main, three-phase entrances from overhead 2400/4160-volt distribution feeders. Both three-phase and single-phase circuits can be looped together when required, but normally will be operated as radial feeders.

When completed, the subdivision will contain 46 transformer kiosks, and four sectionalizing kiosks, although in the first phase, only 22 transformers and two sectionalizing kiosks have been installed. The initial system is only 2⅓ miles in length at present, but will ultimately cover a distance of five miles.

Due to the congestion created on the street allowance by the presence of trees out to the future curb line, and subsequent installation of curbs, gutters, sanitary and storm sewers, water and gas mains, and, possibly, sidewalks, no real security of service was likely if our equipment were installed on the road allowance. Therefore, rear lot construction was chosen, except for two short sections where rear lot lines were so low and wet that street construction was the only alternative.

A square, semi-buried type of housing, having a finished height above ground of only 28 inches, was selected for the transformer enclosures. These units can be opened quite easily by one man after removing the padlock and lifting the lid. Within these enclosures (or kiosks), the transformer bushings and cutouts are above ground level and the rest below.

These kiosks, which are vented and completely grounded, will hold a transformer up to 75 kva capacity.

In Oakridge Park, the general arrangement has secondary bus going both ways from the kiosk to a service pedestal, from which a group of services will emanate. Service pedestals are relatively inconspicuous, being approximately seven inches in diameter, and projecting in the rear lot corner only 18 inches above ground.

*(Continued on page 4)*



ONE OF Ontario's first electrically-heated schools is Oakridge Park Public School being built in five stages in the new subdivision. Cost of the new heating system and the extra insulation is being offset by the elimination of a boiler system.

The customer services vary from four to 14 per transformer, depending on the configuration of the blocks, the width of the lots and the voltage regulation anticipated.

The average throughout the whole subdivision is nine per transformer. Usually four services are served from a terminal box in the transformer kiosk and four are served from each service pedestal located two lots each way from the transformer kiosk.

**Loading Calculations**

To determine conductor size and make-up to go along with the selected secondary bus and service arrangements, long-range loading calculations were made. On the assumption that every home in the subdivision would have an electric water heater, and allowing for a small annual increase in load, an undiversified demand of 16.5 kilowatts for a single customer was forecast. It was assumed that this load would be reached in 30 years. The design also made provision for a small percentage of scattered electric home heating load. On this basis, it was possible to estimate the diversified demand of groups of customers from one to 26 in five-year steps up to 30 years.

Using the arrangement of services from various pedestals and from the transformer kiosks (in conjunction with the table of diversified demands), it was possible to arrive at a transformer loading for each location at the end of the 30-year period. To avoid installing the ultimate, 30-year capacity requirement initially, it was decided to use the demands expected at the end of a 10-year period for the initial transformer installation. On the average, the ultimate transformer size provided will see a diversified load at the transformer of five kva per customer.

For secondary conductors, current carrying capacities and voltage regulation at the ultimate loading indicated that ⅀2/0 aluminum secondary bus would be necessary, and the services to the houses would consist of ⅀1/0 or ⅀2 aluminum for the average service up to 100-ampere capacity, depending on the length. For full 200-ampere services, conductors from the kiosk or pedestal to the house consist of 3-⅀3/0 copper P.V.C., insulated type TW. An electric home heating service requires a separate length of service conductor. The average length of service from a kiosk or service pedestal to a house is 75 feet.

So that the whole subdivision could be served from any three-phase source into the subdivision or that any single-phase loop could be completely served from either end of the loop, ⅀3/0 stranded copper for three-phase primaries and ⅀4 stranded copper for single-phase primary loops and taps were used. Primary neutrals are ⅀1/0 bare stranded copper for the three-phase circuits and ⅀4 bare solid copper for the single-phase circuits.

Most of the available types of cable were considered and the final choices were shielded polyethylene P.V.C. for primaries with 600-volt polyethylene insulated aluminum conductors for secondary bus and services. The low cost of cables with polyethylene insulation compared to other coverings was a big factor in this decision. Moreover, this cable has proved satisfactory for primary underground installations in several Ontario utilities.

**Experienced Contractor**

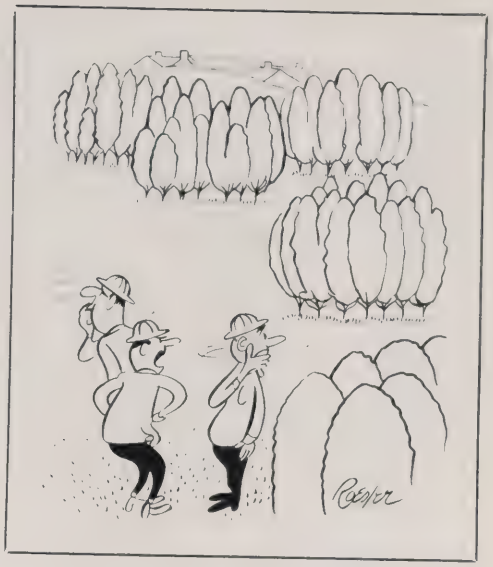
In calling tenders, 11 submissions were made with a wide range of prices for winter and spring construction. The successful bidder was not only lowest, but also had previous experience in underground distribution work of this



ETER BASES and service entrances a combined electric home heat- and average 100-ampere service.



TYPICAL service pedestal showing the terminals where 2/0 secondary bus will terminate. A maximum of six services of No. 2 or No. 1/0 aluminum can be taken from these Oakridge Park pedestals.



"THIS hiding a kiosk with landscaping is OK, but where is it?"

*—Courtesy of The Front Line, Iowa Light and Power Company.*

type for a Western Ontario utility.

The sequence of operations for all work done by the contractor included setting service pedestals and kiosks, installing road-crossing ducts, main trenching, laying of various cables in the trench and backfilling. Staking of the centre line and locating pedestals and kiosks were done by Hydro personnel. Power conductors were laid in trenches on the centre line of a five-foot right-of-way along one side of the properties, either at the rear or side of the lots. Communication cables have been laid in a separate trench on the centre line of another five-foot easement on the opposite side of the property lines. Kiosks and pedestals are set in lot corners — offset from the trench in most locations.

Now that this underground system has been installed, some precautions must be taken to ensure service security in the subdivision by educating building contractors and the residents to be aware of and show some respect for the underground plant. There will be a continuous need to educate the home-owners regarding the Hydro easement on their property and that excavations, locating of buildings, planting of trees or shrubs, as well as changes of ground levels, might possibly interfere with the underground electrical installations.

In Mr. Moull's opinion, the experience gained at Oakridge Park will be invaluable in making further improvements in designs and materials for future installations.

A complete analysis of costs for the Oakridge Park installation shows that they were slightly above the original estimate of approximately two and one-third times the normal cost for conventional overhead construction.

**Winter Work Difficulty**

Part of this can be attributed to the severe working conditions encountered during winter construction, which should be avoided. Even in Oakridge Park, where the soil is predominantly sand and well-drained, frost to varying depths required the use of compressors and jackhammers at road crossings and along other runs.

"I firmly believe that the period from May 1 to December 1 is the ideal and only economical time for installations of this type to be made, considering the variety of soil conditions and climatic conditions that might be encountered," this Ontario Hydro engineer says.

Meanwhile, there are four other large subdivisions in the London area being contemplated for development with underground power service. Most of these plans will be developed in stages, depending on the impetus of home sales.

"The fact remains that people are becoming conscious of aboveground utility plant, and while enjoying better electrical living, are anxious also to enhance their properties," Mr. Moull states.

(Based on paper presented by C. J. Moull, P.Eng., at the Eastern Zone Winter Meeting, Canadian Electrical Association (Transmission and Distribution Underground Section) at Halifax, N.S., during January this year. Additional information is obtainable from Mr. Moull, who is Distribution Engineer, Western Region, Ontario Hydro — 340 Wellington St., London.)



A GROUP like this going about the business of operating a modern electric utility is bound to cause comment. They are members of the St. Thomas P.U.C. doing a grand job of publicizing 50 years of Hydro service.

# St. Thomas Looks Back 50 Years



A HIGHLIGHT of the celebrations was the unveiling of this plaque in the foyer of the P.U.C. building. Memorial was uncovered by Service Foreman Joseph Skelding, whose service record dates back to 1912. Shown at the ceremony, from the left, are: Commissioner George Lang; Mayor V. A. Barrie; Commissioner R. T. Gilbert; Chairman P. R. Locke; Mr. Skelding and Commissioner W. J. Robbins.

"FULLY 10,000 citizens congregated in the vicinity of the St. Thomas City Hall, March 24, and roared a mighty welcome as a flood of golden light magically and instantly illuminated the city."

These were the glowing words one newspaper used to describe the coming of Niagara Power to St. Thomas—in 1911. The same paper carried the prophetic words of Ontario Hydro Chairman, Honourable Adam Beck, who presided at the ceremonies:

"This will be one of the most important events for many years to come in the City of St. Thomas—the delivery of hydro-electric energy over a high tension transmission line unequalled for length anywhere in the universe.

"Think of it," the first Hydro Chairman said, "you are bringing Niagara Power 125 miles from Niagara Falls, not for today or tomorrow, but for all time to come—for your children and your children's children."

Many of these "children" were on hand half a century later to

verify his predictions. They set back the clock for a day to commemorate the advent of Hydro power, and March 14, 1961, took on much of the flavour of a bygone era.

Employees of the P.U.C. answered trouble calls, read meters, replaced burned-out street lamps, and carried out their regular duties attired in period dress. They made their rounds in vintage cars, and very definitely succeeded in making the citizens of St. Thomas Hydro conscious.

A special section of the *St. Thomas Times Journal* was devoted to the history and progress of the Hydro movements in Ontario and to the local utility in particular. Displays of antique electrical equipment further emphasized the day's theme.

Among the highlights of the celebration was the unveiling of an impressive plaque adorned with a bust of Sir Adam Beck. The honor of uncovering the memorial, located in the foyer of the P.U.C. building, was reserved for service foreman Joe Skelding. He is the oldest employee in point of service with the St. Thomas utility, having joined as a meter reader in 1912, at the age of 14 years.

An interesting account of the history of Hydro in St. Thomas was given by Chairman P. R. Locke.

The events were climaxed in fitting fashion at a dinner attended by more than 150 utility employees, their wives, members of City Council, and other special guests. Ten employees and former employees received 25-year service certificates. ■



PRESENTATION of 7 awards for completing 25 or more years' service was a feature of the dinner. Recipients, from the left, are: Frank T. Ford, Bert L. Caskey, Mrs. Gertrude Boisseau, J. Walton Peart; Mrs. Theresa Baker, Joseph R. Skelding and Sidney L. Chamberlain. Honoured in absentia were George Rogers, Edward Cohoe and Hugh Mailing.



THE old-timer, right, was the last word in utility vehicles when it was acquired by the Electrical Department about 1914. Note the wooden wheels, solid rubber tires and chain drive. It contrasts sharply with the modern fleet of trucks, lower photo, now being operated by the St. Thomas P.U.C.





"RAIN IN POETRY" is the subject of Barbara Borland's winning speech in the elementary school section.



JOHN WRIGHT proudly displays cup he won in prepared speech section of the secondary school contest.



IMPROMPTU winner Carol Blaxley holds proof she can think on her feet. Shield will adorn her school's trophy case.

# Unaccustomed as I am . . .

## "Veterans" of the Ontario Public Speaking Contest will never resort to this hackneyed phrase

"MR. CHAIRMAN, honored guests, ladies and gentlemen. . . ."

With these words, 51 elementary and secondary school students began speeches ranging from "What It Means to be a Canadian" to the "United Nations." Finalists in the Ontario Public Speaking Contest had been chosen from thousands of students throughout the province to compete in the Toronto finals during Easter vacation.

Some were slightly nervous, and a few seemed overawed by the large adult audience listening intently to their every word. But, without exception, the enthusiasm and ability of the young speakers amply rewarded those O.M.E.A. districts and municipal electrical utilities which had supported the contest at the local and district levels.

Held in conjunction with the 101st annual convention of the Ontario Education Association, the finals were co-sponsored by Ontario Hydro and the Ontario School Trustees' and Ratepayers' Association.

The contest was divided into two sections: prepared speeches for elementary school students; prepared and impromptu speeches for secondary school students.

A pert 12-year-old from Agincourt Public School, Barbara Borland, took top honors in the elementary school section. As after-dinner speaker at the annual O.S.T. & R.A. banquet, she captivated the audience with her prize-winning speech on "Rain in Poetry."

Barbara credits her drama training for much of her success. In fact, the confident Grade VIII student plans a career as an actress in live theatre, in spite of her realization that "People think it's silly for a 12-year-old to want to be an actress."

Red-headed, freckle-faced Ricky Davey, a Grade VII student at Markdale Public School, won second prize with his speech, "What It Means to be a Canadian." The subject "Our servant —Electricity" won third prize for Deborah Follis, 10, a Grade VI student at St. Alexander's Separate School, North Bay.

In the secondary school section, John Wright, 19, of Toronto, placed first with his prepared speech on "What It Means to be a Canadian." A Grade XIII student at the University of Toronto Schools, John plans to study medicine at the University of Toronto.

One of the youngest finalists in the secondary school section, Carolyn Pile, 14, won second prize. The daughter of R. K. Pile, sales superintendent in Hydro's Georgian Bay Region, Carolyn also spoke on "What It Means to be a Canadian." Roger McCombe, 17, a Grade XIII student at Lindsay Collegiate, won third prize with his prepared speech on municipal government.

Half the secondary school contestants came to the finals totally unprepared, because they were competing in the impromptu speech section. Each contestant was handed a list of topics half an hour before he made a three-to-five-minute talk.

Poised and self-confident, Carol Blaxley, 16, a Grade XI student at Newmarket District High



HAPPY Barbara Borland accepts cup from W. Ross Strike, Hydro's 1st Vice-Chairman. Other winners are Richard Davey, Markdale, and Deborah Follis, North Bay. In background are Dr. V. S. Wilson, O.M.E.A. President, and Hon. John P. Robarts, Minister of Education.

CONTROL ROOM of Sir Adam Beck No. 2 plant fascinated these four finalists in elementary school section. From left: Frank White, first operator; Melville Thompson, Toronto; Barbara Borland, Agincourt; Susan Keachie, Stouffville; and Richard Davey, Markdale.

School, talked her way to first prize on the subject "Canada—to live in or leave." Danny Knight, 18, a Grade XIII student at Malvern Collegiate, Toronto, placed second. Third prize went to Ronald Rieser, 19, a Grade XIII student at the Hon. W. C. Kennedy Collegiate, Windsor.

W. Ross Strike, 1st Vice-Chairman of Ontario Hydro, presented the following prizes to the winners:

Elementary school—first, $75, a large cup for the winner's school and a small cup; second, $50 and a small cup; third, $25 and a small cup.

Secondary school, prepared speech—first, $100, a large cup and a small cup; second, $75 and a small cup; third, $50 and a small cup; impromptu speech—first, $50, a large shield for the winner's school and a small shield; second $25 and a small shield; third, $15 and a small shield. In addition, all three first-place winners received a set of encyclopedias.

All contestants were presented with a scroll of merit and a trip to Niagara Falls and the Sir Adam Beck - Niagara Generating Station No. 2 as guests of Ontario Hydro. ■



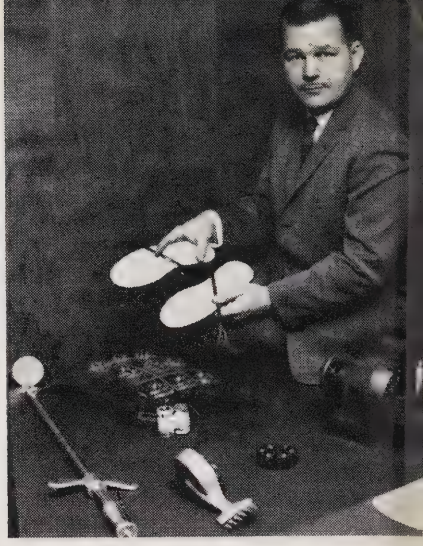


SECONDARY SCHOOL winners on their tour of Niagara as guests of Ontario Hydro. From left: Carol Blaxley, Newmarket; Danny Knight, Toronto; Ronald Rieser, Windsor; Carolyn Pile, Barrie; John Wright, Toronto; and Roger McCombe, Lindsay.

*Now that you have invented a better moustrap, what can you do about it? The Canadian Research and Development Foundation might be a good place to start*



FOUNDER and head of the Canadian Research and Development Foundation, Paul H. Baumann is dedicated to assisting Canadian inventors. Ill-fated "Arrow" shown in background incorporated two of his own patents.



HAMILTON inventor A. L. Fallstrom adds his idea to a display of recent inventions. They include a water ski, improved blood transfusion apparatus, an electronic game and a hockey puck on ball bearing for indoor use.

# Presenting Inventing

By Henry Thompson

THE Time: A.D. 2000.

The Place: Your average Canadian home.

The Cast: You and your family.

As the scene opens, you are arriving home from work. You have driven from the city in your wheelless, wingless combination automobile and airplane. This family vehicle has a motor approximately the size of a tea cannister, and its operating expenses are almost nil.

You notice that your lawn needs trimming. A tiresome task? Not at all.

You merely flip a switch. Your lawnmower then trundles out under its own power and sets to work, guided by an electronic mechanism.

Inside the house, your wife and daughter are watching the latest women's fashion show, direct from Paris, on your immense, three-dimensional television set. The set hangs on the wall much as an ordinary picture would.

Preparations for dinner are going ahead on schedule, though all controlled electrically. Several hours earlier, your wife pushed the required buttons for the planned menu and your dinner will be ready for serving on time.

Following dinner, you might wish to see and talk to your son, away at university in another city. Dial the proper numbers on your combination telephone-television and you are immediately reassured of his well-being. You can see for yourself.

Wild day-dreams of a Jules Verne-type mind?

Day-dreams yes, but certainly not wild, according to Danish-born engineer and inventor Paul H. Baumann, founder and director of the Canadian Research and Development Foundation, with headquarters in Toronto.

He points out that individual inventors everywhere are using the theories developed by the scientists on such complex projects as space exploration and nuclear development to work out the kind of products which add up to a higher standard of living. Other inventors, without an inkling of scientific knowledge, are translating simple ideas into profits for themselves and a better way of life for us all.

Here in Canada, creative inventiveness is flourishing.

Inventors across the country are pouring forth their ideas to the Canadian Research and Development Foundation, seeking help to get their ideas patented and introduced on the market. Assisting these inventors is the basic purpose of this non-profit organization.

The assistance afforded by the Foundation takes several forms. These include advice to the inventor on ways to refine his idea, help in preparing plans and drawings complete with specifications



for a patent application, and, in some instances, financial assistance towards the patent process.

The necessary financing for the Foundation operations is derived from membership fees. Individual memberships are granted for an annual fee of $20, corporation memberships for $80. An inventor need not be a member of the Foundation to use its facilities, and there is no initial charge for any service rendered. If and when his idea is marketed and royalties are forthcoming, the Foundation receives 10 per cent of the royalties for the first two years.

"Inventors in Canada are working hard on projects that will save time and money for the general public, and lessen effort while increasing efficiency," stated Mr. Baumann, whose foundation handled over 3,000 inventions for Canadian inventors in 1960.

"A study of the new products offered to industry by Canadian inventors today indicates that these people are bending their creative efforts to every field imaginable. Each phase of our modern society is a potential challenge for the creative inventor with his new ideas."

Regular bulletins issued to industrial organizations by the C.R.D.F. list the new products and ideas available. Such diversified items as a high-speed food blender and mixer, a revolutionary logging apparatus, an improved reclining chair with an automatically adjustable footrest, a new type of an old children's toy, the skipping rope, and many, many others are listed.

Some of the inventions might appear rather bizarre when first encountered, but upon reflection they all have some merit.

Perhaps the world has not been waiting with baited breath for electrically heated boot insoles, operated on batteries carried in the wearer's pocket, but operators of heavy equipment and others who must work outdoors in the bitter Canadian winters will appreciate such an item. A patent on this insole has been issued, and the inventor is now waiting for an industrial organization to take over his idea and start production.

A Toronto physician, Dr. Fred Demanuele, has recently received a patent on an electrically-driven, vibrating toothbrush. This idea is actually quite practical, and considerable interest has been shown by several firms in its production. You can't help brushing your teeth correctly with this device.

Necessity is often a spur towards inventiveness.

Take the case of 93-year-old A. D. Bentley of Toronto. Mr. Bentley is an ardent sports fan, but he found the backless benches in most sports arenas were too uncomfortable for him to enjoy the games. Therefore he developed a harness that hooks on the bench and affords him the necessary back support for comfort while enjoying the contests. Besides adding to his own comfort and enjoyment when attending sporting events, Mr. Bentley may add to his income when and if his idea is marketed.

The inventors themselves come from all walks of life. They are trained engineers and technicians, housewives, d o c t o r s, unskilled labourers, musicians—in fact any class you might name probably has an inventor within its ranks.

In Montreal, a 60-year-old grandmother and machine operator, Mrs. Edith Brien, has patents on a number of her ideas, the latest being an unusual type of hair curler.

A church organist and music teacher, Bill Carty of Toronto has recently received patents for a portable drafting unit, designed for quick sketching in the field and where an ordinary drafting unit is not readily available.

But scrutiny of the inventing field indicates very definitely that it is not all work and no play.

A good number of our Canadian inventors are bending their cap-

*(Continued on page 22)*

**CHER — THE BAKER — THE CANDLESTICK MAKER . . .**



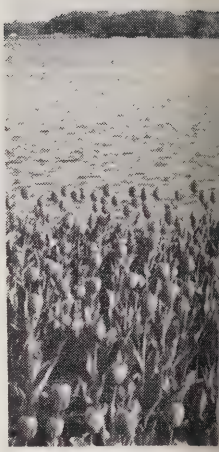


. . . and probably any other profession you might name is represented among Canada's legion of inventors. Shown from the left are Bill Carty, a professional music teacher, with his invention, a portable drafting unit; Dr. Fred Demanuele, a fine advertisement for his own invention, an electrically-vibrated toothbrush; and 93-year-old A. C. Bentley, inventor of a harness for use on backless benches of sort found in arenas.

*CANADA'S CAPITAL DRESSES FOR SPRING*



A FEW of the thousands of visitors who flock to Parliament Hill in tulip time. Historic buildings and landscaped surroundings are a year-round source of tourist interest.



ONE OF THE MANY tulip beds along the capital's magnificent driveway system. Water in background is a section of the Rideau Canal. Colorful blooms highlight some 45 miles of scenic drive.



# TULIP

ALL the world knows about cherry blossom time in Washington, but Canadians are beginning to point with equal pride to the beauty of their own capital in springtime. Crocuses, daffodils and tulips are the Ottawa symbols.

Over a million colorful tulips bloom each year along some 45 miles of scenic driveway and on grounds surrounding public buildings and graceful monuments.

Ottawa celebrates the Canadian Tulip Festival during the last two weeks of May, when the bloom is at the peak. But nature, with a strong assist from the horticulturists, adds color to the capital scene from the time the snow leaves the ground. More than half a million crocuses are the first to arrive, and these hardy harbingers are followed by a million daffodils.

Ottawa's tulip display is far from a haphazard mass planting. The National Capital Commission has evolved a unique method of presenting the blooms to the best



RESQUE Dow's Lake, a man-made lagoon
Rideau Canal, is an ideal playground.
lawns and tulip beds enhance its beauty.



A SMALL BROWNIE poses in a large tulip bed. Containing more than 100,000 blooms, this display is Ottawa's largest. Tulip festival is held during last two weeks of May.

# STIVAL

possible advantage. Called a "flowing mass display," it incorporates most of the fundamentals of design—harmony, contrast, repetition, sequence and balance.

To avoid dispersing the effect through many small showings, the main tulip beds contain up to 121,000 bulbs, and they are built around a few strong colors with a touch of contrasting blooms for accent. Most beds are set on slopes near curves on the road, so that they can be readily seen by motorist and pedestrian alike.

Some 200 varieties of tulips bloom in the public beds each spring, in colors ranging from white to deep mahogany. And it is estimated that almost as many are grown privately by Ottawa residents.

Sponsored by the Ottawa Board of Trade, the tulip festival belongs to all Canadians, and the Board urges them to view this annual spring spectacle whenever they get the chance. ■



TULIP BEDS in Major Hill Park with Parliament Buildings in background. Firing the noon-day gun is an old Ottawa tradition. Citizens automatically adjust their watches as its sound rolls out.



FUTURE home economists at the University of Toronto work with new appliances supplied by Ontario Hydro and the Toronto H.E.S.

# STUDENTS COOK WITH ELECTRICITY

HOME economics students at the University of Toronto can now carry out their cooking experiments electrically.

Original gas equipment in the Faculty of Household Science's food preparation centre has been replaced with 12 surface-type electrical units, each containing four elements. Toronto Hydro and Ontario Hydro shared the cost of the new equipment, installed as part of a program which supplies electrical appliances free-of-charge to home economics classrooms throughout the province.

Experimental food cookery requires critical controls which can duplicate temperatures exactly from day to day. To ensure that the new electrical units would meet the requirements of the Faculty of Household Science, Ontario Hydro and the equipment manufacturer became involved in research and experimentation. The controls chosen for each element are the infinite heat type with multiple settings that reach the required temperature rapidly.

Since the appliance program was started in 1959, more than 70 per cent of Ontario's primary and secondary schools with home economics programs have been equipped with the latest and best. in electrical ranges, refrigerators, dishwashers and automatic washers and dryers. More than 1,000 appliances have been installed in 323 schools, through the co-operation of 105 municipal utilities.

The plan is backed by a three-way agreement among Ontario Hydro, the municipal utilities and manufacturers, and endorsed by the Association of Municipal Electrical Utilities. Existing electrical appliances will be replaced whenever new models, incorporating major improvements, have been placed on the market.

As well as providing schools with the most up-to-date and efficient electrical appliances, the program gives students a better understanding of the wide range of modern equipment available. This will prove helpful when they are planning their future homes. In the words of the program's theme, they are "learning today to live better electrically tomorrow." ■



NEW EQUIPMENT such as this reduction tacheometer speeded work and reduced costs on EHV transmission line survey.

# Power from the North

## A progress report on the EHV project

THE rugged terrain of Northern Ontario will see the start of a new highway of power before the year is out.

To be built in stages, Ontario Hydro's first extra-high-voltage transmission line is scheduled eventually to reach from the Abitibi Canyon to Southern Ontario, more than 400 miles.

On completion, the 460,000-volt EHV line will feed vital energy from the remote James Bay watershed into provincial power grids.

It means the opening of a new frontier for Hydro. With the advent of EHV, the delivery of large blocks of power over long distances becomes more economical —and remote hydraulic sources can be incorporated into the system.

Initially, EHV will hook up 528,000 kilowatts—from stations now planned or under construction in the North—into Hydro's power system. But the potential from sites in this area is more than a million kilowatts.

The new line will be much less costly than the equivalent 230,000-volt conventional circuits—the highest voltage now used in the province. It will require less land and physical plant because its power-carrying capacity is four times as great.

Before construction starts next winter, Hydro engineers will build several sections of test line so that practical tests can be made to make sure they have the right approach.

Already EHV prototype lines and equipment have undergone painstaking studies at Hydro's Coldwater project. Tests during the last 18 months provided valuable information and demonstrated that the technical problems associated with EHV transmission could be solved economically.

Primary purpose of the experiment was to provide measurements of corona losses and radio interference from various sizes and arrangements of bundled conductors at extra high voltage. Conductors are the most important element in the design of high voltage transmission lines. Not only costly in themselves, they are also the major influence on the cost of towers, and determine to a large degree the over-all cost of the line.

On the field survey for the line, carried out during the last three winters, Hydro crews used some radically new equipment. This included a reduction tacheometer—known as the RDS—a telescope-type instrument recently introduced to Canada, with an extension rod that was completely redesigned by Hydro surveyors.

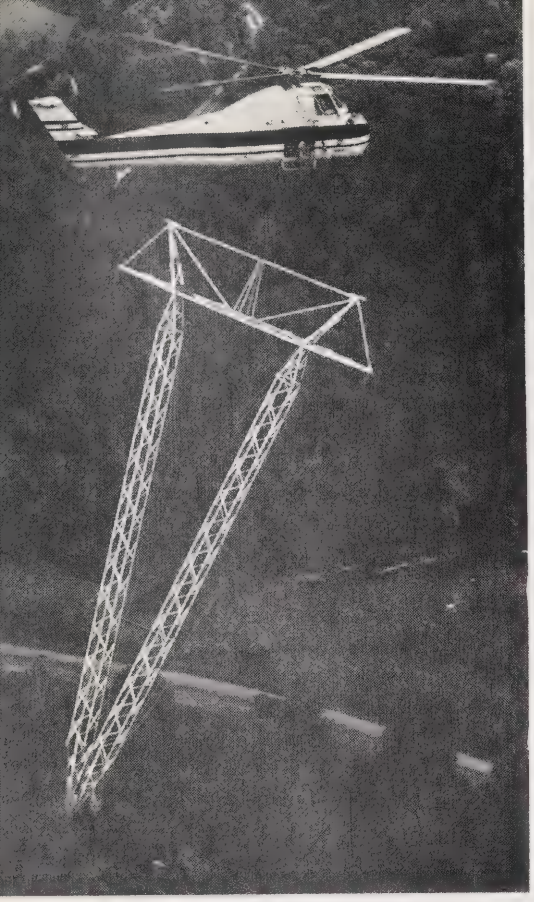
The use of this equipment resulted in savings and faster work. The conventional method requires eight men in two crews, one to measure distances and the other to obtain levels. The RDS does both operations at once, and one crew of five men can handle the job.

Apart from the new equipment, Hydro surveyors successfully brought a new technique into play. Some of their tangents were as much as eight miles long, over rough and rolling country where it was impossible to take a sight from one point to another.

They solved the problem by taking a sight on a helicopter hovering above the point, and then taking it to ground. It proved effective.

Weather and terrain were not the least of the difficulties encountered in completing the initial survey for the first phase of the project. In temperatures that dropped to 40 below zero, the survey crews used ski-equipped planes, helicopters and muskeg tractors to get themselves into camp, and sometimes bulldozers to get out.

Proceeding at a four-mile-a-week clip, the surveyors were aided by their new equipment in keeping



OPERATING as a flying crane, the versatile helicopter is shown here lifting an aluminum tower into position on a line building project in the United States.





HELICOPTERS performed yeoman service in the rough and roadless country where Ontario Hydro is building the EHV system and feeder lines. With the Sikorsky S-55, men were lifted to the job from the base camp, eliminating temporary depots. Men shown disembarking and heading into the wilderness were working on the line between Little Long Rapids and Abitibi Canyon.

up to the men who cut a three-foot swath through some 200 miles of hinterland. Using power saws, they averaged about ¾ miles a day.

A relatively new technique will also be involved in building the line — tension stringing. This avoids abrasions to the conductors, caused by dragging on the ground, which could cause excessive corona.

This method will have to be developed to permit the simultaneous stringing of the four conductors in each bundle—most other EHV projects in North America have used two or three. The four-conductor bundle is a new procedure on this continent, and Hydro engineers will have to develop methods and perfect them as they go along.

The first stage of the EHV line will be built north of Sudbury, over land sprinkled with rock outcrop and muskeg, and often inaccessible. The construction schedule, and with a new technique involved this is subject to change, calls for the start of clearing the right-of-way on the first section this June, in the 30-mile stretch of swamp land north of Timmins.

Hydro crews will start construction in December, as winter is the best time of year to work on muskeg—said to be too solid to drink but too liquid to build on.

The second section will be a 50-mile stretch through sandy terrain to Shining Tree Road, south of Timmins, which is to be completed by the Fall of 1962.

On the third section the crews will swing back north, through swamp country to Hydro's Abitibi Canyon station, 90 miles north of Timmins and the line's terminal point. Construction will continue throughout the winter of 1962.

In the spring of 1963 the final section, from Shining Tree to a point just north of Sudbury, will be completed.

The second phase, south from Sudbury to Barrie, may be specially designed to operate initially as a double-circuit 230,000-volt line with provision for ultimate conversion to a 460,000-volt single-circuit line.

The EHV trunk will deliver the output of future stations in the James Bay watershed to Hydro's combined Northeastern and Southern Ontario systems.

Work began last spring on Little Long G.S., 42 miles north of Kapuskasing, which is scheduled for operation by winter of 1963, with an initial capacity of 114,000 kilowatts.

A second station, Harmon G.S., is scheduled for completion by the end of 1965, with a capacity of 110,00 kilowatts.

Kipling G.S., farther downstream towards James Bay, is scheduled for service by the winter of 1966, with a capacity of 132,000 kilowatts. All three are on a 15-mile stretch of the Mattagami River.

Construction is also well advanced on the Otter Rapids G.S., 30 miles east of the Mattagami on the Abitibi River. Otter Rapids is to be placed in service by the end of 1961, with an initial capacity of 86,000 kilowatts from two units. Two similar units are scheduled for 1963.

Apart from the obvious benefits to the province, the EHV techniques developed by Hydro may have far-reaching effects for the rest of Canada. The country has abundant water power resources in the far north, but the problem has always been to develop economical transmission. ■





ONE VIRTUE of aluminum tower construction is evident here. This 20-foot-long weighs only 170 pounds. The use of guyed aluminum towers can result in lower costs for transportation, footing installation and erection.

VIRTUALLY the same as towers ordered by Ontario Hydro for the first section of EHV line, this tower was designed by Aluminum Company of Canada. It is being erected at General Electric's EHV test project in the United States.

# NEW SYMBOL OF POWER

## Towers scheduled for use on the first section of EHV line are a radical departure from any used by Ontario Hydro in the past.

FAMILIAR landmarks throughout the Province, the transmission line towers of Ontario Hydro will take on a brand new appearance next winter in one part of the north. V-shaped and made of aluminum, the towers for the first section of the Commission's extra-high-voltage transmission line will be unlike any now in use in Ontario.

From a distance they will appear to defy gravity—with no visible means of support. Close up, the guy wires, which hold the V-tower upright on a single base, will be readily visible.

Ontario Hydro has ordered 100 of these towers for the first 30-mile stretch of EHV line, which will be built north of Timmins. Delivery and construction are scheduled for next winter.

Conventional steel towers with four legs are not easily adaptable to the rough terrain of the north.

Designed by Aluminum Company of Canada Limited, the new towers are expected to save money on initial costs, transportation, footing installation and erection. They will be manufactured in collaboration with other structural metal fabricators, and the V-shape design may be used widely in the future for steel as well as aluminum towers.

Two men can handle a 12-foot section with no difficulty. The towers are so light, less than a third of the weight of a conventional steel tower, that studies are now being made to determine whether helicopters can be used to place them in position. These aircraft have been used by United States utilities to erect towers and string cable.

Guyed-towers are not new—they have been used in Europe for at least 30 years. But the V-design and the use of aluminum are two recent innovations which make the tower distinctively Canadian.

A major cost-saver is pre-assembly, made possible by easy transportation and simple erection procedures. There are also several marginal advantages.

Time saved in the footing procedure is most important. Only one footing is needed, compared to four for conventional towers. Conventional tower footings must be exact to within a quarter of an inch, while guyed towers are much more flexible, and a foot or so either way in their anchor foundations doesn't matter. This is a big advantage in rough terrain—and the rougher and more difficult the land, the bigger the savings from guyed towers. ■




FREIGHT CARS often outnumber passenger coaches on the "Little Long Express," and she will never be mistaken for a crack trans-continental. Ancient, perhaps, in its appointments, the train is a welcome sight to camp residents, whose only access to the outside world is by rail.

# LITTLE LONG EXPRESS

*You won't find observation cars, lounges or piped music on Ontario Hydro's "Northern Cannonball" but it does boast a diesel engine, caboose and day coaches*

by Don Carmichael

LIKELY to live long in the memory of Ontario Hydro's field forces engaged in work on the far northern Mattagami River sites is the "Little Long Express."

Though it will never achieve the renown of the "Wabash Cannonball", revered in song, nor the speed of the Santa Fe Chief, its place in the still-unfolding saga of hydro-electric power development in this province is assured.

Some who ride it back and forth over the 40-odd miles of desolate bush-country track from Kapuskasing to the Little Long campsite are less than enamoured of its virtues. But most are mindful of the fact that it serves as the only link with the outside world, and think kindly of the 70-ton diesel engine, its old cars and wooden caboose.

The Little Long Express, owned by Ontario Hydro and operated and maintained by the Spruce Falls Power & Paper Company, on whose rails it runs, is short on comfort and convenience but long on service. Since it began operating last Fall, it has hauled more than 20,000 tons of equipment and carried approximately 24,000 passengers to and from the project, where more than 600 men are now working.

For Little Long alone — the first of three sites on a 15-mile stretch of the river to be developed by 1966 — an estimated 60 to 70,000 tons of material will be moved by the train.

The Little Long Express is getting the job done. Seven times a week — once a day — it heads out from the Hydro siding and warehouse built on the western outskirts of Kapuskasing along the Spruce Falls line to Smoky Falls.

At mileage 43 it veers off on

more than a mile and a half of spur line built by Hydro to the station and security office on the west side of the river at Little Long Rapids. Material and equipment aboard is unloaded and transported across to the campsite.

Everything "from soup to nuts," is carried, says R. H. "Bob" Dickson, project engineer at Head Office. Biggest piece of equipment moved in one piece to date was a 2½-yard shovel.

The trip up takes between two and three hours, depending on the weight the 600-horsepower engine is pulling. If it can't make the grade, the train is split up into two sections which are taken in one at a time.

In addition to its own cars, Hydro rents Canadian National Railway freight cars on a daily basis. These cars, loaded with Hydro material, are switched over onto the siding at Kapuskasing to save transhipment. Transports are carried "piggyback" on two Hydro flatcars brought up from the A. W. Manby Service Centre in Toronto.

Six days a week, the Little Long Express leaves the Kapuskasing siding at 12.00 noon. The mail is brought over from the C.N.R. station three-quarters of a mile away, and with two toots on the whistle "away she goes". On Sunday, it doesn't leave until 8.00 p.m., giving those who came in on the weekend a chance to enjoy the day in town. Fare is $2.00 round trip and $1.25 one way.

For emergency runs and special travel arrangements, a Chevrolet station wagon fitted with "bogie" wheels (flanged wheels which fit on the rails) is used. This unusual car makes the trip in a little under two hours, but doesn't exceed 35 miles an hour because it would probably jump the track.

Including the rolling stock, sidings, spur line and other equipment, Hydro spent more than $200,000 for the Little Long Express. In addition, it is sharing the cost of keeping the Spruce Falls line in good repair.

Alternative to the train was construction of an access road from Kapuskasing to the site. Studies showed, however, that utilizing the existing track would be more economical than building and maintaining such a road.

Twenty-seven miles to the northeast of Little Long, as the crow flies, is Hydro's Otter Rapids Generating Station, scheduled for initial operation this year, but there is no direct access between the two sites.

By 1963 a road about 30 miles long will be constructed to join Little Long with Pinard T.S. and Abitibi Canyon.

Buying a train is a rather novel departure for Hydro, but not new. For a number of years it has been operating a train from the Ontario Northland Railway station at Fraserdale to the Abitibi Canyon Colony, a distance of some 3½ miles.

The Little Long train will be used for the construction of both the second and third stations on the river. The access road at the Little Long site will be extended to Smoky Falls and the Harmon and Kipling generating station sites.

When work on the Mattagami is completed, the engine and cars will probably be sold. Hydro paid about $90,000 for the engine, six passenger coaches, two mail and baggage cars, three boxcars and the caboose. All were bought second-hand, and ranged in price from $68,000 for the diesel, which saw service in Vermont for the St. Johnsbury & Lamoille County Railroad, to $450 for the caboose.

The passenger cars are circa 1900 vintage day coaches and have seen better days. The same goes for the caboose and the other cars.

Though its years are numbered, the Little Long Express is a welcome sight when it rolls into the campsite. It is playing a vital role in the program to develop remaining hydraulic resources along the northern frontier. ■



E is the train standing at the on Ontario Hydro put on the map its Mattagami development.



THIS TRIM station wagon is right at home on rail or road. It is used for emergency purposes and other special travel arrangements.



ALL MATERIAL and equipment required for the project must come by rail. An estimated 60 to 70,000 tons will be moved in this way.

# Bring Home the Bacon - *CLEAN*



By Mike Sullivan

MEN, move over.

Next time you go hunting or fishing—and presuming you're successful—the ladies will not only tell you how to take care of the bag—they'll also tell you why.

In a session on the preparation of fish, fowl and game, held at the 52nd O.M.E.A.-A.M.E.U. annual convention, the ladies learned the ins and outs of what to do with fish and game—from the time it's taken to the time it's dished up piping hot on the table.

Lois Hurst, Ontario Hydro home economist, who conducted the session, also introduced her audience to some tall tales of the North.

Like the two old prospectors discussing the weather. One said it was so cold where he came from, the candle flame froze "and we couldn't blow it out." The other replied that in his home town "our words froze as they came out—we had to fry them to see what we were talking about."

After listening to Miss Hurst for half an hour, it was brought home that, all too often—as some mere males may have realized—the hunter doesn't know the right way to dress the game in the field, how to store it at home, or how to cook it.

"And, all too often, it results in something less than the treat anticipated," says Miss Hurst.

To put it another way, as did the famous French chef, Brillat-Savarin:

"Under the direction of a skilful cook, game undergoes a great number of scientific modifications and transformations, furnishing the majority of highly flavored dishes on which a transcendental gastronomic art is based."

The ground-rules of this art are fairly straightforward.

First, get your deer.

Bleed and draw it as soon as it's shot. If you don't, bacteria in the abdomen will spoil it quickly.

Hang it at least a week. This breaks down muscle fibres and makes the meat tender.

Don't, whatever you do, carry the carcass on the fender of your car next to the engine. Heat will ruin any game.

Follow these rules, and you'll be able to sit down to a succulent steak, or a delicious roast saddle of venison.

One other thing, remove all scent glands. Deer have musk glands on the inside and outside of each hind leg. Most other animals have them. Leave muskrats alone—or make a do-it-yourself fur coat: these animals are sprinkled with glands, which, unless removed carefully, create a somewhat objectionable flavor. Although some people claim muskrat—expertly prepared—tastes delicious.

When it comes to fish, the one basic rule to remember is that freshly-caught fish, cooked on the spot, taste much better than any cooked by a master chef and served by three waiters.

Otherwise, to keep the fish sweet, don't drag it in the water beside your boat. For one thing, the water is warmer at the surface, and outboard motors often build up a film of oil on the water.

A word for the duck hunter. You'll make a hero of yourself if you can get your bird with a minimum of pellets. Apparently there's no easy way to get out every piece—and housewives have become resigned to the fact that biting down on these miniature ball-bearings seems to be the price of enjoying a fine piece of wildfowl. Resigned maybe, but they don't like it.

Now that our wives can keep tabs on us, there'll be no more gutting fish and drawing fowl on the kitchen table. They've got the perfect answer—it will taste much better if it's done on the spot.

But there's one consolation. Each lady received a copy of Hydro's pamphlet of Northern recipes. It made this man hungry. . . . Venison, Cochrane Style; Broiled Mooseburgers; Bear Stew a l'Espagnole; Rabbit in Ale Sauce; Wild Duck Fritters; Game Pie; Northland Maple Pudding.

Mmmmmmm. ■

# ALONG HYDRO LINES



## First for Township

FOR THE FIRST time in the history of Sandwich West Township, a public office is held by a woman. Mrs. David (Joan) Pope, in her first political venture, topped the candidates in the race for the five seats on the Public School Area "A" Board. Mrs. Pope is shown being congratulated and welcomed by Reeve Lawrence Brunet, at right, who was re-elected by acclamation, while looking on is Deputy Reeve Frank Crowe, who retained his post. Mr. Pope is Manager and Secretary of Sandwich West Township Hydro System. ■

### Management changes at Welland Hydro

A. R. Turton, formerly engineering assistant to the manager of Sarnia Hydro, has been appointed general manager of Welland H.E.C. All engineering and maintenance will be under Mr. Turton's direction.

The appointment is part of a reorganization being carried out in the light of increased responsibilities created by annexation. Under the new plan, T. W. Houtby becomes executive consultant and comptroller. Functions under his direction will include accounting, banking, secretarial work, general office procedure and public relations.

General foreman M. O. Shepherd becomes general superintendent.

### Hearn plant reaches full power

Canada's largest thermal-electric plant reached its ultimate capacity in March when the final unit was brought into service at Ontario Hydro's Richard L. Hearn generating station. With a total capacity of 1,200,000 kilowatts, this plant can supply enough power to meet double the demands of the City of Toronto.

The Hearn station was built in two stages. The original plant, completed in 1953, consisted of four 100,000-kilowatt units. The extension, started in 1956, consists of four 200,000-kilowatt units.

When all units are operating, the $156,000,000 plant requires more than 3,000,000 gallons of water every five minutes for cooling purposes. At maximum load, each boiler in the extension takes 70 tons of coal an hour.

### Former H.E.C. chairman dies at Niagara Falls

Stanley E. Thomson, prominent electrical engineer and a member of the Niagara Falls Hydro Commission for 14 years, died recently. He had served as chairman of the Commission for seven years.

Mr. Thomson was superintendent of Ontario Hydro's Toronto power plant at Niagara Falls for 25 years prior to his retirement in 1946. He had worked at the plant for many years before it was acquired by Ontario Hydro in 1922.

A keen community worker, Mr. Thomson was a member of the Vocational Advisory Committee of the Niagara Falls Board of Education for 37 years. He is survived by his wife, the former Louise Smith, and by three sisters.

### Hydro serves big area

The electrical service area of Ontario Hydro covers a quarter of a million square miles, larger than any utility in the Western World.




TWO MILLION man-hours free of a disabling accident is the enviable record of Ontario Hydro's Eastern Region. National Safety Council award is presented by Commissioner D. P. Cliff, left, to A. M. Pedersen, regional manager, and G. R. Shannon, safety officer.

### Playing it safe

Safety records are going by the boards these days as Ontario Hydro groups vie with each other for honors.

The Eastern Region was the first to win the National Safety Council's award of merit for 1,000,000 man hours without a disabling injury. This was achieved in 1959, and the Region has just recently completed 2,000,000 accident free hours for its second award.

The East Central and Niagara Regions have also joined the exclusive "one million hour" safety circle.

At the Area level, the safety-conscious Blenheim Area has operated for nine years, and the Orillia, Dunnville and Beamsville Areas have operated for eight years without a disabling injury.

## PRESENTING INVENTING

*(Continued from page 11)*

abilities towards our recreational hours. They are coming up with many new forms of sports equipment, all designed to increase the fun and improve the catch or score.

A case in point is the spring-actuated diving board, developed by Charles Borg of Toronto, a former employee of the C.R.D.F. Mr. Borg's diving board is designed to give smaller divers equal spring from the board as is enjoyed by their heavier counterparts.

New types of fishing lures and other outdoor sports equipment are favourite projects of the sports-minded inventors, and many such Canadian items will be on the market shortly.

Of course, the all-time favourite project for inventors is the will-o-the-wisp perpetual motion machine. Each month five or six new ideas are advanced to the Foundation by hopeful inventors. Many are quite ingenious but, unfortunately, none of them work. The advice from Mr. Bauman:

"Forget the perpetual motion machine. Work on an idea that is feasible, practical, and has commercial possibilities. And, if you need assistance, come to the Canadian Research and Development Foundation. We are equipped, prepared and anxious to help you." ■

### Hydro area manager appointed to A.P.E.O.

L. Patrick Ryan, P.Eng., manager of Ontario Hydro's St. Catharines Area for the last 12 years, has been appointed to the permanent staff of the Association of Professional Engineers of Ontario.

Mr. Ryan was chairman of the Niagara Group of Professional Engineers which has since become the first official Chapter of the A.P.E.O. His new duties will include the formation of a system of Association chapters throughout the province as a means of improving communications among members in the various regions.

The A.P.E.O. has a membership of 20,000 throughout the province, and serves as the licensing body for all engineers practising in Ontario.

### Nuclear Association plans conference

The first annual meeting and conference of the Canadian Nuclear Association will be held in Toronto, May 16 and 17, at the Lord Simcoe Hotel.

Prominent speakers from the United States and Canada, who are engaged in the research, development or utilization of peaceful uses of nuclear energy and radio isotopes will be included on the agenda.

Ontario Hydro's model of the Douglas Point nuclear - electric plant will be among the exhibits. The Commission will also be represented on a panel scheduled to discuss long term electric energy requirements in Canada and the prospects for nuclear power.

Hon. Robert W. Macaulay, Ontario Minister of Energy Resources and 2nd Vice-Chairman of Ontario Hydro, is Vice-President of the Association.



W. H. EDWARDS



J. R. McCULLOUGH



D. B. IRELAND



D. J. GORDON



H. H. LEEMING

# ADMINISTRATIVE CHANGES

**Senior appointments and organizational changes announced by Ontario Hydro**

THE initial step in a long-range plan to integrate the Niagara and West Central Regions has been announced by Chairman James S. Duncan.

J. R. McCullough, manager of the Niagara Region, will be responsible for the two Regions, while W. H. Edwards, manager of the West Central Region, will assume the new executive post of Administrative Director, Regions, at Head Office in Toronto.

In announcing the change, the Chairman said that some of the business functions would be centralized at the West Central Regional Office in Hamilton. However, the important administrative functions associated with the operation of the large generating stations in the area will remain at Niagara Falls.

Mr. Duncan stated that the gradual integration of the two Regions is expected to contribute substantially to Ontario Hydro's efforts to hold down costs and maintain rates at a low level. He explained that the move was necessitated to a great extent by the loss to municipalities through annexation of a large number of rural customers formerly served directly by Ontario Hydro.

"In the five-year period ending June, 1961," he said, "these two Regions will have lost the revenue from more than 27,000 rural customers because of annexation by municipalities.

"This has had a major effect upon our operations and we have been studying for some time how we could keep proper control of expense in relation to work load, and at the same time maintain a high standard of service."

A second administrative change involved the transfer of three rural operating areas — Stratford, Clinton and Mitchell — from the West Central Region to the Western Region.

Recent organizational changes within Ontario Hydro include the appointment of D. J. Gordon, director of Consumer Service, to the new position of Executive Director — Marketing. In his new post, Mr. Gordon will co-ordinate the work of the Sales and Consumer Service divisions. He will report directly to I. K. Sitzer, assistant general manager — Production and Marketing.

Mr. D. B. Ireland will be the new director of the Consumer Service Division. He was formerly Consumer Service Engineer, Central Region.

Harry H. Leeming has been appointed Executive Director — Engineering. He is assuming the duties of F. H. Chandler, executive assistant to Harold A. Smith, assistant general manager — Engineering. Mr. Chandler has retired after 43 years' service with the Commission.



H. P. CADARIO



I. C. INGIMUNDSON

Succeeding Mr. Leeming as Director of Engineering is H. P. Cadario, formerly assistant director.

The new Manager of Hydro's East Central Region is I. Carl Ingimundson, formerly executive assistant to the General Manager. He succeeds Thomas H. Gibbon, who died in March.

The Research Division will be transferred to the Engineering Branch and the Security Division will be transferred to the Personnel Branch.

A number of changes in management titles have also been announced:

The Production and Sales

*(Continued on page 24)*

# OFF THE WIRES



BOUQUETS to the St. Thomas Public Utilities Commission on their recent ceremonies arranged to commemorate the 50th anniversary of Hydro service in that progressive city (see page 6).

* * *

AND JUST A WORD of congratulations to the person who had the smart idea of publishing an advertisement in the special 50th anniversary issue of the *St. Thomas Times-Journal* in connection with the Hydro anniversary, which showed photographs of the utility's meter readers in their uniforms.

* * *


**MEET THE MEN WHO READ YOUR HYDRO AND WATER METERS**



BOB WHITEHEAD WALT LE COURTOIS DON MUDDLE

**If You Are Not At Home When Our Meter Reader Calls . . .**

1. HE WILL LEAVE A CARD
2. KINDLY COMPLETE the INFORMATION REQUESTED and MAIL IMMEDIATELY

Bills Are Necessarily Estimated If Reading Cannot Be Obtained

Special readings during working hours can be arranged by telephone. Please let us know when you will be at home.

OBSERVING 50 YEARS OF HYDRO

**PUBLIC UTILITIES COMMISSION**
OF ST. THOMAS

36 St. Catharine St Phone ME 1-5550


NOT A BAD IDEA for any utility these days, in view of the fact that some communities have been plagued by persons who have posed as Hydro meter readers to gain unlawful entrance to private homes, quite often with unpleasant results for the owners.

* * *

THERE'S GOOD NEWS about the co-operative municipal utility—Ontario Hydro plan to promote the use of major electrical appliances by installing them free of charge in Ontario schools with home economics classrooms.

* * *

IN 1960, some 643 units were installed in 212 schools. The municipal utilities provided 368 units, while the remaining 265 were installed by the Commission.

* * *

A NEWS ITEM in a recent issue of the *New York Times* states that the chief mechanical engineer of the Pennsylvania Light and Power Company has completed a study indicating that heated condensing water discharged from a thermal-electric plant improves the fishing in the vicinity of such generating stations.

* * *

IN A PAPER presented at a recent annual meeting of the American Society of Mechanical Engineers, the official in question said that a survey conducted under his supervision showed that many fish swim into power plant water discharge channels during cold weather and stay there for many months. Apparently the warm water keeps the fish lively and interested in bait during the late fall, winter and early spring when they are ordinarily drowsy.

* * *

THE U.S. ENGINEER reported that he and his assistant caught 100 bass in less than an hour (tsk! tsk-) while fishing in a lagoon near the Pennsylvania power company's Delaware River plant.

* * *

FOR OUR PART, we can see the headlines now: "Waltonites flock to Ontario Hydro's new Lakeview station." That's the new thermal-electric plant on Lake Ontario west of Toronto, which the Commission is planning to place in service later this year.

* * *

OUR SPIES tell us the condensing water from that plant will be 12 to 15 degrees warmer when it's returned to Lake Ontario.

* * *

ONTARIO'S fish and game wardens may be in for a busy winter during 1961-1962 scouting for illegal fishermen in the area of the plant. ■

## ADMINISTRATIVE CHANGES AT ONTARIO HYDRO

*(Continued from page 23)*

Branch becomes Production and Marketing; the Sales Promotion Division is renamed the Sales Division; and the Comptroller's Branch becomes the Finance Branch.

The Assistant General Manager and Comptroller, E. H. Banks, becomes the Assistant General Manager — Finance, and W. D. Gillman, director of accounting will henceforth, be known as Comptroller. ■

THIS dramatic view shows a hard cofferdam crew at work on the init of this work at Little Long Rapids, will be temporarily halted during t run-off. The cofferdams will extend channel to permit construction of gravity section and two sluiceways "in



# Beauty!



## *Fast . . . clean . . . convenient cooking! That's the BEAUTY of an AUTOMATIC ELECTRIC RANGE!*

A beauty to look on . . . a beauty to cook on . . . that's what women are saying about today's beautiful automatic electric ranges. Designed for extra speed, easier cleaning, controlled baking and top-of-the-stove cooking . . . these new streamlined models are more automatic than ever before! Now, you can have an automatic oven that will *keep* your roast ready to serve —even when dinner has to wait! Top elements, too, can be set to turn off when foods are cooked "just right"!

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## ABOUT THIS MONTH'S COVER

W. ROSS STRIKE, Q.C., who becomes the Ninth Chairman of Ontario Hydro, June 1, is the subject of this month's cover. His enormous responsibilities are symbolized by the background—a map of Ontario Hydro's province-wide power system. The new Chairman's career is outlined in a personality sketch commencing on page 2 of this issue.

## Coal From Nova Scotia

One of the shortest and most touching letters ever addressed to Ontario Hydro was received recently "From the daughter of a Cape Breton miner." It read:

"God Bless and thank you for your C-B coal order."
(Signed) Mrs. W. L. Gallivan,
Sydney, N.S.

The writer was obviously referring to a contract for 200,000 tons of coal awarded in April to a Nova Scotia coal producer for use at the Richard L. Hearn and Lakeview generating stations.

This was the first time a Maritime producer had bid competitively on a major Ontario Hydro contract. In so doing, the producer was, of course, aided by substantial federal subsidies. All tenders for acceptable coals are considered on the basis of heat content on a cents-per-million B.T.U. basis, and the Commission was delighted to find the Nova Scotia bid successful.

But, apart entirely from government subsidy policy, it is much too early to assume that Ontario Hydro will provide a full scale market for Maritime coal. For there is more involved than price. The burning characteristics of fuel in modern coal-fired power stations are of ever-increasing importance and, in the case of Maritime coal, these will have to be determined over a considerable range of operating conditions.

Tests carried out with 10,000 tons of Nova Scotia coal in the smaller units of the Hearn plant late in 1958 indicated that the fuel was satisfactory for peak load (two-shift) operation. The recent 200,000-ton purchase will enable the Commission to make exhaustive cost and efficiency evaluations of the coal in the large units of the Hearn and Lakeview plants.

Much has been said by the press on the benefits to be derived from buying in Canada. This continues to be the purchasing policy of Ontario Hydro whenever material and equipment of satisfactory quality is available in Canada at competitive prices.

Deeply sympathetic with the plight of the Maritime coal miners, and fully aware of the desirability of meeting its great and growing coal requirements at home, Ontario Hydro is not free to philanthropize. The Commisison is bound by the tenet upon which it was founded—that the people of Ontario be supplied with electric power at the lowest possible cost consistent with good service.

Providing that the Maritime coal producers can meet the performance and cost requirements of Ontario Hydro, they can look forward to other substantial orders in the future. ■



ONTARIO HYDRO'S Richard L. Hearn plant, top photo, is framed in the bow-lines of a lake boat. Ships, coal and electric power are vital elements in Nova Scotia's bid to bolster a vital industry. Cape Breton's Caledonia Colliery at Glace Bay, lower photo, is one of three scheduled to be shut down shortly for lack of markets.



# personality profile on HYDRO'S NEW

HE has travelled practically everywhere—particularly in his native Province of Ontario.

We're speaking, of course, of W. Ross Strike, Q.C., who becomes the ninth Chairman of Ontario Hydro on June 1 this year.

Ross, as he's known to a host of municipal utility associates and Commission colleagues in every part of Ontario, moves into this onerous and important position with the distinction of having served on the Commission longer than any other person—except the first Chairman, Sir Adam Beck.

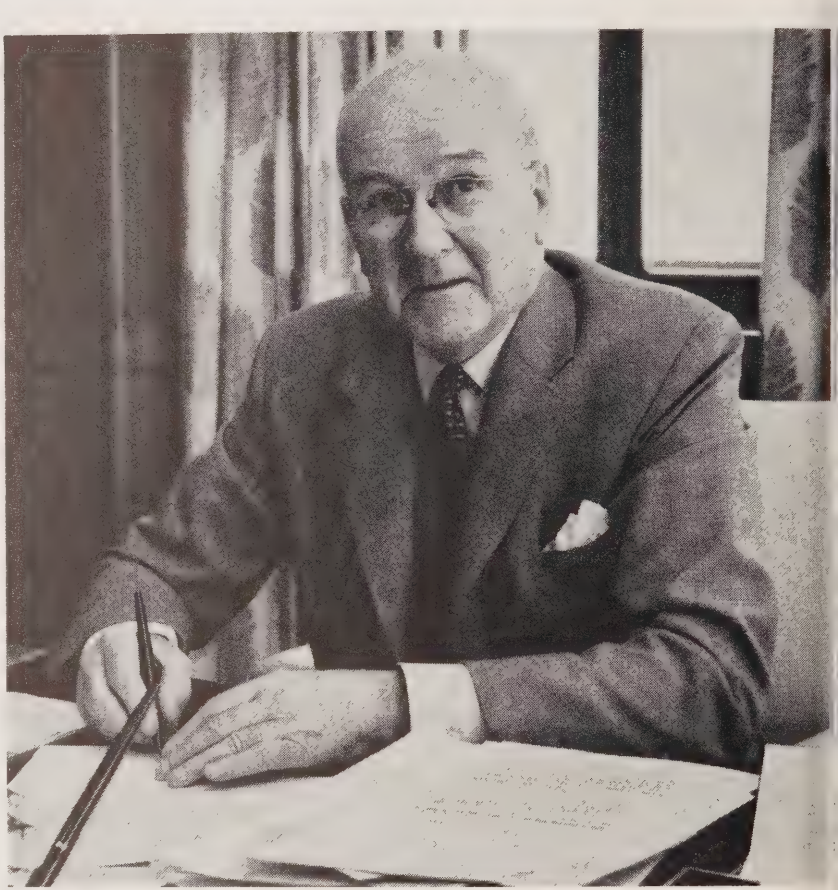
First appointed a Commissioner in June, 1944, while still President of the O.M.E.A., he also enjoys the unique reputation of having outlasted four Chairmen and four other Commissioners.

But, even more significant, his lengthy association with the Commission spans one of the most remarkable and colorful periods in its history.

A year after Mr. Strike became Commissioner, World War II came to an end, and Ontario Hydro took up the challenge of postwar expansion, which was destined to far exceed the dreams of even the most confirmed optimists.

Who could have foreseen then that Hydro's customers (direct and indirect) would increase by 131 per cent in less than 15 years, or that its power demands would advance by 223 per cent in the same period?

But Ross Strike has seen all this happen since he first took his seat as an Ontario Hydro Commissioner. In the interim, too, he has witnessed over a five-fold increase in the expansion of Hydro's generating facilities.



APPOINTED A COMMISSIONER in 1944, Ross Strike's association with Ontario Hydro spans one of the most eventful periods in its history. He has been First Vice-Chairman since 1956, and has a record of 29 years' service with Bowmanville P.U.C.

By his persistent and enthusiastic interest in virtually every phase of the Commission's varied activities—an interest which runs the gamut from consumer service, through the highly technical field of engineering to the complexities of financing Hydro's widespread undertakings—the new "Chairman-elect" has attained a position of authority as a close and valuable counselor to the men who have successively served as Ontario Hydro chairmen in the past decade or more. Moreover, Mr. Strike has been prominent in helping to formulate the many new policies and in planning the numerous organizational changes which have taken place as the Commission and its associated municipal partners were expand-

# HAIRMAN

by Boyd Graham



BOWMANVILLE, Mr. Strike's home town, celebrated its 100th anniversary in 1958. As an ex-Mayor of the Durham County community (1932-36) he was a key figure along with former Chief Magistrates, Sidney Little (centre) and Lawrence C. Mason in centennial parade.



EVIDENCE of his keen interest in O.M.E.A. - A.M.E.U. activities is Mr. Strike's remarkable record of attendance at their meetings. This panel also includes: J. M. Low, Uxbridge; B. M. Graham, North Bay; Norman Smith, Owen Sound; and T. E. Dietrich, Ontario Hydro.

ing into a three-billion-dollar enterprise.

His extensive knowledge of Hydro operations has been reflected in many epochal Commission decisions—decisions, for example, which have set in motion such projects as the great program of frequency standardization in Southern Ontario during the late 1940's; the building of the Commission's two largest hydro-electric stations (on the Niagara and St. Lawrence Rivers) as well as the completion of 17 other waterpower plants; the incorporation of a substantial block of thermal-electric resources into its hitherto exclusively hydraulic system, and Hydro's pioneering participation in the field of nuclear power generation.

Actually, this quiet-spoken man, with the infectious sense of humor, brings to his new job some three decades of experience in the electrical utility field, and what is generally conceded to be an unequalled record of participation in O.M.E.A. activities.

His Hydro career started back in 1932 when his fellow-citizens of Bowmanville elected him as their Mayor—and, of course, an ex-officio member of Bowmanville P.U.C. That was his first formal introduction to Hydro, and there's no doubt he must have found it a fascinating association, for he has been at it ever since.

He served until 1936 as Chief Magistrate of his home town, where he had established a law practice several years before. But his retirement as "first citizen" merely gave him more time to devote a good part of his attention and energy to the administration of Bowmanville's growing Hydro and water systems.

Moreover it gave Hydro's new Chairman extra time to develop his interest in O.M.E.A. affairs—of which he had already had a taste with his election to the Presidency of the Eastern Ontario Municipal Electric Association in 1935. In 1943, after a period of eight years' service (probably another record), Mr. Strike retired as the top officer of the E.O.M.E.A. executive only to step up to the Presidency of the parent association in 1944—the same year that he became an Ontario Hydro Commissioner.

But this latter appointment hasn't quenched his enthusiasm for his "first love"—the municipal Hydro systems of the Province. He's still serving on the Bowmanville Commission after 29 years, and, in the intervening years, his name has become even more closely and prominently linked with the O.M.E.A. and the A.M.E.U.

If anyone is looking for further evidence of his interest in these organizations, all they have to do is examine his record of attendance at their annual winter conventions and district association meetings which is said to outrank any person presently associated with the Hydro family. And there's no doubt that he holds the record for having been a head-table guest during the joint annual winter conventions of these associations more times than any other Hydro official. Ron Mathieson, manager of the A.M.E.U., who is a reliable authority on such matters, has pointed out that Mr. Strike has sat at 53 winter convention head tables in the last 16 years alone.

Of course, there's no reliable data on the number of miles he travels every year to attend these meetings, or to officiate at numerous formal ceremonies marking the

opening of new Ontario Hydro and municipal Hydro buildings and other functions. A very modest estimate places the total at 10,000 miles a year!

At any rate, between Labor Day and September 15 last year (a popular season of the year for O.M.E.A. district annual meetings) Mr. Strike was not home for dinner one evening—and he's the first to assert that was not meant as a reflection on his wife's cooking.

Nor is the foregoing any grounds for accusing him of being a party-goer. As Toronto Hydro's Chairman, Bert Merson, declared, on behalf of the O.M.E.A., in paying his tribute during the gala "Ross Strike Night"—one of the major highlights of the 1960 joint O.M.E.A. - A.M.E.U. winter convention in Toronto: "Ross Strike's observations have always been attuned to the most urgent needs of the day. Looking back over the O.M.E.A. minutes of bygone years, you will find the name Ross Strike appeared in connection with almost every major undertaking since the mid-30's."

Not only was he the author of a booklet setting forth the duties and responsibilities of municipal Hydro commissioners, which has become "required reading" among his municipal colleagues, but he was also one of the originators of a combined O.M.E.A. - A.M.E.U. project, which resulted in the publication of the A.M.E.U. "Guide to Municipal Standard Construction"—a prodigious work that has won international acclaim among electrical utility engineers.

Another of his many "brain children" was his sponsorship of the formation of the Kummercial Klub, which has resulted in a better working relationship between municipal Hydro officials and the representatives of allied industrial firms and suppliers, who are now eligible for associate membership in the A.M.E.U.

In recent months Mr. Strike has been engaged in a personal campaign to impress on his municipal friends the importance—in fact the paramount necessity—of instituting active sales promotion programs to counteract the inroads of natural gas on their existing and potential electrical loads.

Not content with being just an advocate, he has done something positive about it. He has actively and determinedly sparked the appointment of special O.M.E.A. district association load-building and customer relations committees, which have been busy holding meetings with utilities in their respective areas relating to the introduction of spirited sales campaigns under utility auspices.

Quite apart from his keen interest in the welfare and progress of the municipal utilities, Mr. Strike has, on countless occasions, manifested his recognition of the role which Ontario Hydro and its staff are making to the development and growth of Ontario. His appreciation of their efforts as public servants has been conclusively demonstrated by his almost unbroken record of attendance at regional retirement dinners and other staff gatherings. A few months ago, when the West Central Region held its annual dinner, he was unable to attend, due to illness. This marked the first time he had missed one of these events throughout the entire Province within the recollection of anyone in the Hydro organization.

Ross Strike's devotion to public service has probably been motivated by the discipline learned in a Methodist parsonage. For he was born in one in 1895, at the Village



FOR THE THIRD YEAR in succession Mr. Strike presented trophies to the winners of the Ontario Public Speaking Contest. He is shown here with Richard Davey, Deborah Follis and Barbara Borland, 1961 elementary school winners.



MR. STRIKE'S SON, Alan (right), is now carrying on the law practice which the Hydro Chairman established at Bowmanville early in his legal career. His daughter-in-law, Mrs. Alan Strike (left) and his wife were proud witnesses of the honors conferred on Mr. Strike at the 1960 O.M.E.A. - A.M.E.U. meeting.

of Carrying Place, one of the many quaint hamlets of rural and picturesque Prince Edward County, which once were noted as strongholds of Central Ontario Methodism.

He and his brother, Glen (now Magistrate Glen Strike, of Ottawa) pursued their education at various elementary and secondary schools by necessity—not because of any lack of intellectual aptitude, but mostly as the result of the fact that their father and mother, the late Rev. Alfred James Harvey and Ella May Strike, consummately respected the Methodist dictum that ministers of the faith remain only four years in each pastoral charge.

Progressing further, we find Ross being articled in law for a brief time in 1914. A few months later he enlisted with the Canadian Army after the outbreak of World War I, and subsequently served in France, where he was twice wounded. He was decorated with the French Medaille Militaire for his participation in the Battle of Vimy Ridge.

Bent on his legal career, young Mr. Strike headed back to Osgoode Hall right after his demobilization and graduated with the Veterans' Class of 1920. Subsequently he practised law with the well-known firm of Tilley, Thomson and Parmenter in Toronto, at Perth, and, finally, at Bowmanville, where he settled down with his bride of a few years, the former Eloie Graham Casselman, a graduate dietitian, whom he met and wooed at Morrisburg. Mr. Strike, who is a member of the Canadian Bar Association, is quietly proud of the fact that his son, Alan, is now carrying on the Bowmanville law practice under the firm name of Strike and Strike.

Although Ross Strike has gone far since he established this law practice, the Town of Bowmanville has come to have a special place in his heart, largely because of the contribution he has made to this community through his association with civic affairs; with the activities of Trinity United Church, where he was Sunday School Superintendent for 25 years, as well as his affiliation with the local Masonic Order and the Bowmanville Rotary Club.

A keen sportsman, he likes to start golf early in the season, and, when he stores away his clubs, it's time to start skipping a rink at the nearby Oshawa Curling Club.

Although Mr. Strike will direct Canada's largest electrical utility from its Toronto headquarters, he won't leave his Bowmanville home. In his view there's a lot to do in a small place—and it amuses him when Toronto friends ask him what he does in Bowmanville "where there's more than they ever had in a big city."

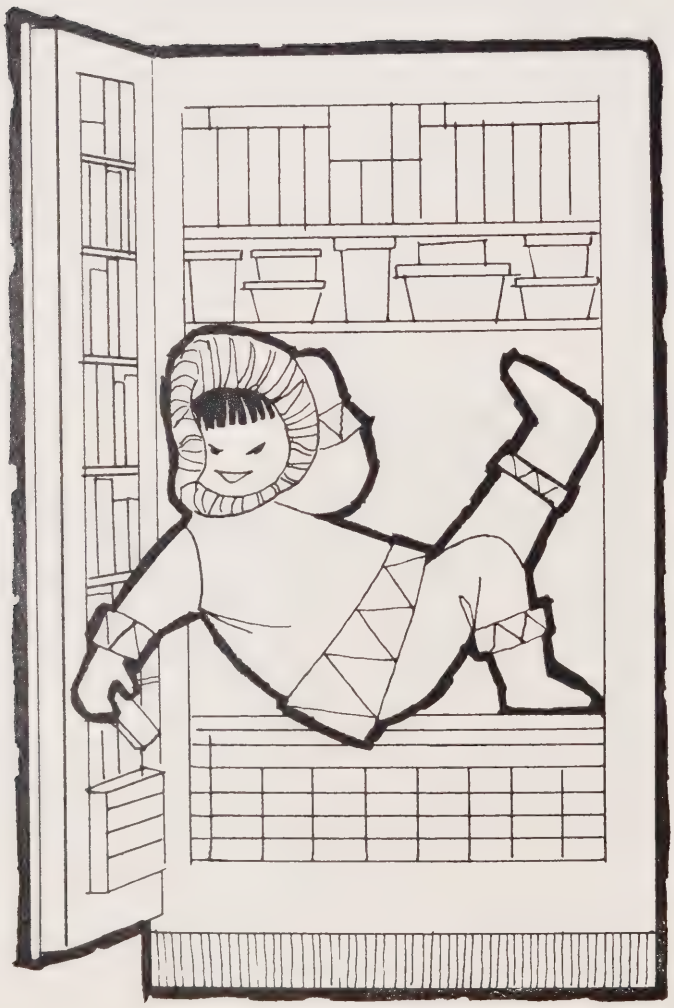
This then is Ontario Hydro's ninth Chairman—William Ross Strike, Q.C.—the man whom Prime Minister Leslie M. Frost, in announcing his appointment before members of the Ontario Legislature on March 29th this year, described as "a man of great experience, fine personality and good judgment," and as one "who will carry on the traditions of service and development which commenced with the first Chairman, Sir Adam Beck." ■



AN ENTHUSIASTIC GOLFER, Mr. Strike also counts curling among his favorite sports. He is shown here in the first O.M.E.A. - A.M.E.U. Convention bonspiel with D. C. Brazier, Toronto (left), and Harry Foy, manager, Electric Service League of Ontario.

# OPERATION ESKIMO

*As a result of this packaged promotion, few Ontario residents will be left unaware of the virtues of owning a home freezer*

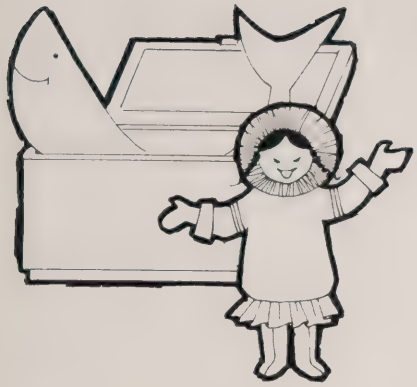


If enthusiasm is any indication, Operation Eskimo will be a whopping success.

By kick-off time, May 15, more than 90 per cent of Ontario's municipal utilities had joined manufacturers, appliance dealers and Ontario Hydro in a province-wide promotion of freezers and refrigerator-freezers. And much of the credit for the campaign's success goes to the electrical utilities, whose whole-hearted support has been responsible for enlisting the co-operation of local dealers.

To supplement the theme of Operation Eskimo—"a freezer is just like a supermarket in your home"—the purchaser is being offered a $20 frozen food certificate with every freezer and refrigerator-freezer bearing an Operation Eskimo sticker and purchased between May 15 and June 30. Participating manufacturers and dealers share the cost of the gift certificate.

Operation Eskimo advertising at the local level ties in with national advertising of home freezers, which manufacturers are featuring in all media from mid-May to the end of June. As part of the coordinated "umbrella of advertising" during this period, Ontario Hydro is devoting a considerable portion of its advertising, including some



of the Anne Allen radio series, to freezers and refrigerator-freezers. Operation Eskimo billing stuffers are being included with every April and May bill sent out by Ontario Hydro, and many utilities have ordered quantities to send to their customers.

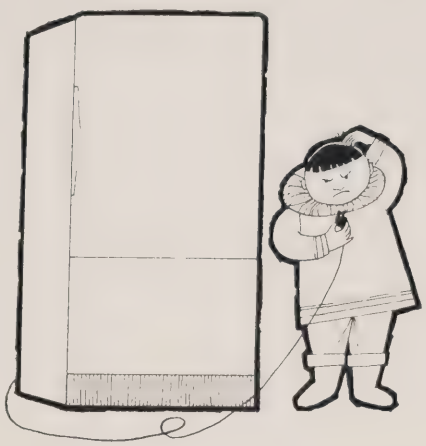
Typical utility reaction to Operation Eskimo is expressed by D. A. Ramsay, consumer service engineer, Western Region: "Utilities in this Region view Operation Eskimo as a promotion embodying a good deal for their customers and providing an excellent vehicle to foster good working relations between supply authority and appliance dealers. For these reasons they have given wholehearted support to the program."

Freezers and refrigerator-freezers were chosen for this initial industry-endorsed promotion of a single appliance for several reasons. One was the high sales potential in this low saturation field. Only one home in 10 now enjoys the convenience and economy of a home freezer unit.

From the utility standpoint, freezers are an attractive choice because each unit adds approximately 1,000 kilowatt-hours to their system's annual load. Equally important, freezer units demonstrate an exceptionally high load factor; that is, the load created by a number of freezer units is very stable throughout any 24-hour period, and the average demand very nearly equals the peak demand.

As well, home freezers and refrigerator-freezers present no wiring problems in installation, and they have minimal service requirements.

Details of Operation Eskimo were drafted by Ontario Hydro's Sales Division, which is responsible for the province-wide co-ordination of the campaign. Initial interest was roused by a freezer



display set up by the Sales Division at the O.M.E.A.-A.M.E.U. convention earlier this spring.

Residential Sales Manager Gordon McHenry and J. B. Brown, sales officer, toured the province to acquaint regional staffs with details of the campaign. Each municipal utility was offered assistance by regional consumer service personnel in presenting the package promotion to local dealers.

In addition, the utilities were sent copies of two kits prepared by Sales Promotion. One is designed to help utilities organize dealer meetings, and provides advertising mats, radio-TV scripts and press releases. The other, aimed at the dealer, outlines the purpose of Operation Eskimo, and includes samples of window banners, advertising mats, radio-TV scripts, stickers and pamphlets which the dealer may order free of charge.

More than 90 per cent of the utilities had pledged their support of Operation Eskimo by the end of April, and had organized dealer meetings in their municipalities, screened Sales Promotion's sound-slide film explaining Operation Eskimo, and distributed dealers' kits. Ontario Hydro's Northeastern Region was the first to report 100 per cent utility participation.

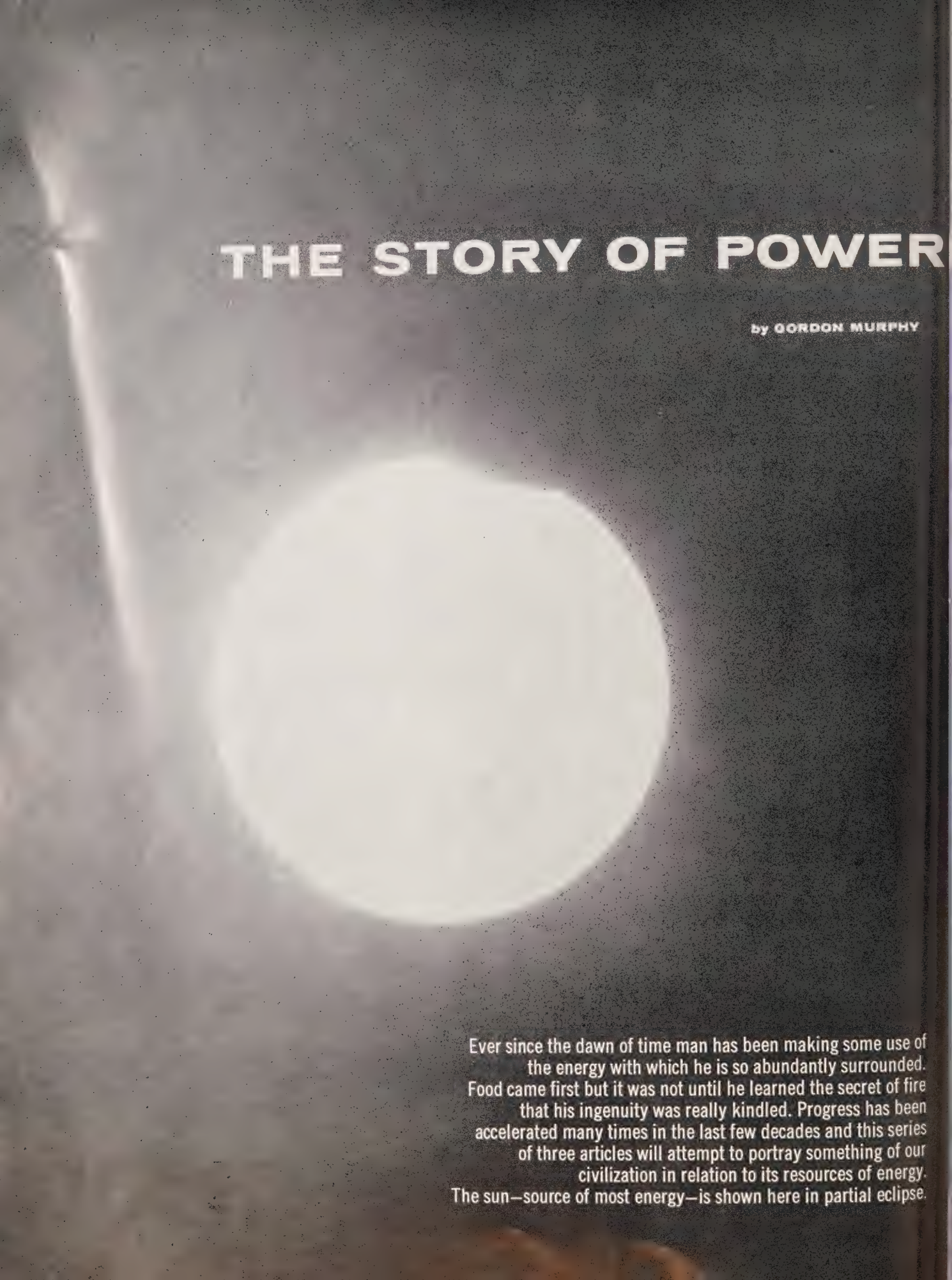
Director of Sales W. R. Harmer is delighted by the response Operation Eskimo has evoked. "I'm tremendously pleased with the enthusiasm everyone has shown for the first single-appliance promotion we've ever attempted. The interest shown by the utilities, in particular, is especially gratifying to my staff and myself. We can predict nothing but resounding success from this point on."

Hydro's Sales Division has been so encouraged by the response to Operation Eskimo, in fact, that another package promotion of an individual appliance — automatic dryers—is on the agenda for the coming fall. ■



# THE STORY OF POWER

by GORDON MURPHY



Ever since the dawn of time man has been making some use of the energy with which he is so abundantly surrounded. Food came first but it was not until he learned the secret of fire that his ingenuity was really kindled. Progress has been accelerated many times in the last few decades and this series of three articles will attempt to portray something of our civilization in relation to its resources of energy. The sun—source of most energy—is shown here in partial eclipse.

PART I



# COAL

## *the Substance of Progress*

*ALL LIFE on earth depends on the energy in the universe. Most of this energy comes from the sun. The sun's rays are essential in the growth of plants on which men and animals depend for food to provide the energy for operating their bodies and muscles. The sun's energy is also stored up in coal, wood and oil, which man burns to work for him. And the sun evaporates water which falls to the earth as rain, giving rise to the rivers and waterfalls which man harnesses for his purposes.*

*Man has lived with and worked progressively at employing energy throughout his million-year existence on earth. It was not, however, until the comparatively recent past—the last two hundred years—that utilization of energy began to rescue men on a large scale from the honored but exhausting role of hewers of wood and drawers of water. Thus the truism, that the history of human development is the history of man's discovery of new sources of energy which he could put to use. Just how much energy is involved in the design of things may be seen from the fact that the amount of energy falling on the earth's surface each year is equal to that which would be supplied by 25 billion tons of coal - or about 100,000 tons of coal for every man, woman and child on the planet.*

OF ALL the sources of energy available to man, the combustibles, or fuels, are the most important. Most types of organic matter have been used throughout history to produce heat, but the usage is now generally limited to coal, wood, gas, petroleum and their products. In addition to the comfort heat derived from the combustibles, internal combustion and steam engines convert them, by burning, into mechanical and electrical power. And it was this source of power that sparked the industrial revolution.

Just as the combustibles are the most important of man's sources of energy, coal is by far the most important of the combustibles, and has contributed more than any other source to the development of modern civilization. Derived from dense vegetation hundreds of millions of years old, coal has stored within it the intense heat of the rays of the sun—so much heat that one pound of coal burning in a modern engine produces as much work as a man can accomplish with his hands in an entire day. Considering that a single modern thermal-electric station, such as Ontario Hydro's Richard L. Hearn plant, translates the energy of tens of thousands of tons of coal into man-hours of work every year, some conception of what coal has meant to human progress begins to emerge.

Coal, considered chemically, consists of carbon derived directly from organic carbon compounds such as starch, sugar and cellulose, which, along with water, form the bulk and substance of vegetation. The carbon in the plants that later formed coal was not obtained from the soil by way of plant roots, but from the air through the leaves. Being the only known natural agency capable of abstracting large amounts of carbon from the air, plants employ it in the construction of their own tissues and store it up for future use—the future in this case being coal in the form of fossilized plant life.

Coal wasn't always popular, however, despite the fact that its use dates back between two thousand and three thousand years when, archaeologists tell us, it was used as fuel for funeral pyres. Remains of coal



TRANSITION from coal to electricity is captured in this silhouette of the Hearn plant. Story is etched in the sky with the towering stacks and mountain of coal representing production and the transmission line towers symbolizing transportation of the finished product. Plants like this will help determine future of coal.

fires have also been found in Roman forts, and there is evidence that it was used in China and by the Greeks before the Christian era.

Coal fell into disfavor in 13th Century England, when the type being used gave off so much smoke that it was considered poisonous. The prejudice against it was so great that King Edward I was induced to proclaim history's first smoke abatement law. The law seems to have been more effective than regulations governing similar offences in some of our modern industrial cities. But perhaps the penalty had something to do with it. Good King Edward decreed death for the offender.

The bias against coal lasted through the reign of Queen Elizabeth I, when prejudice was overtaken by progress in the form of improved burning methods

which helped to set the stage for its universal acceptance as a source of energy. The age of coal was not really launched, however, until about the middle of the 18th Century with the discovery in England that coked coal was an efficient substitute for charcoal in the smelting of iron. This discovery, combined with the invention of the blast furnace, also in England, set in motion the forces that produced the Industrial Revolution.

The importance of coal to the development of a nation is no better illustrated than in England, which, in the century preceding the discovery of coke and the blast furnace, progressed little. This was due to the exhaustion of her forests, for charcoal-fired smelting furnaces had been the basis of the country's prosperous iron industry. Coke put the iron industry back on its feet, and the subsequent inventions of the blast furnace and the hot blast furnace set Britain on the path to commercial and industrial greatness.

The opening of the 20th Century saw the overwhelming dominance of coal on our civilization. It was the basis of all metallurgical processes and, through its increasing use in the production of electricity, affected virtually every phase of human existence. Dwellings were heated by coal and its derivatives; high explosives, disinfectants and many medicines were derived from coal; dyes from coal were revolutionizing the world's centuries-old dyeing processes; electric light carbons, tar, pitch, creosote, printing ink—all came from coal, along with commercial gas. And this was but a start. Today, more than 200,000 chemical products are derived from bituminous coal alone.

The reference to coal as "black gold" was scarcely a misnomer in the early years of this century, for the nations possessing abundant supplies rose to industrial supremacy. The consumption of coal per capita was the accepted barometer of wealth and prosperity.

Coal is found on every continent, in the islands of Oceania and in the West Indies. The first discovery in North America is believed to have been made in Canada's Maritime Provinces in the 1670's. The first written record concerning coal on this continent is contained in a book by Father Louis Hennepin, who reported finding coal on the banks of the Illinois River when he accompanied LaSalle on his explorations in 1680. The man who reported the finding of coal in Illinois was the same Father Hennepin who was the first white man to gaze upon the grandeur of Niagara Falls — the mighty cataracts which were to play so important a part in the industrial development of Ontario and New York State.

Coal-mining in the United States lagged considerably behind developments in Britain, for it was not until 1745 that the first mine went into operation. The industry expanded after the Revolutionary War, but it was a slow process, hindered by word from France that a law had been passed forbidding workmen from burning coal in Paris because of the belief that the fumes caused epidemics of disease.

Progress was not to be denied, however, and production in the United States reached the million-ton mark in the 1840's, a decade in which the industry received a big impetus from the advent of the railroad. Next came the demands of the country's growing

CANADIAN coal miners face an uncertain future. While long-range coal requirements may exceed resources, geography and other factors are working against them. Railroads and domestic heating are two huge markets now virtually lost and American coal enjoys competitive advantage in central Canada.





STEEL INDUSTRY is a major user of coal. Photo shows coke being shoved from one of 191 coke ovens at Hamilton Works, Steel Company of Canada. Coal is baked at 2,500° F. to produce coke, and it is during this operation that the various coal-chemicals are recovered from gas driven off by the heat. Company uses more than 1½ million tons of coal a year. Both natural gas and oil are vying for share of coal's traditional market with the steel makers.

industries, and the need for coal to fuel the thermal-electric plants. Ten per cent of U.S. bituminous coal is exported, much of it moving across the Great Lakes into Canada where, among other uses, it helps to fuel the thermal-electric plants of the Ontario Hydro system.

Importing coal into Canada would seem like "carrying coals to Newcastle" if it were not for the facts of geography and, perhaps, to some extent, quality. Canada's coal reserves are very substantial, but its production is relatively negligible. While Nature was lavish in terms of quantity, the locations of the principal fields—on the Atlantic seaboard and in Western Canada—are such that economics rule out their fullest development.

Close to 60 per cent of Canada's consumption of 25 million tons a year is imported, most of it, as noted, from the United States. At the same time, coal reserves in Canada are sufficient to permit mining to continue at the present rate for *several thousand years.* Canada's coal consumption has dropped more than 40 per cent in the last 10 years.

LATEST AVAILABLE FIGURES ON COAL PRODUCTION AND RESERVES

| Production in *thousands* of metric tons | |
|---|---|
| U.S.S.R. | 506,500 |
| U.S. | 431,000 |
| U.K. | 206,000 |
| West Germany | 132,000 |
| China | 117,000 |
| Canada | 9,600 |

| Reserves in *millions* of metric tons | |
|---|---|
| U.S. | 2,880,000 |
| U.S.S.R. | 1,020,000 |
| China | 1,012,000 |
| Germany | 337,000 |
| U.K. | 172,000 |
| Canada | 89,000 |

From a primitive use as fuel for funeral pyres, coal has come to provide much of the energy and many of the chemicals forming the fabric of modern industrial society. But man's curiosity being what it is, the story is, doubtless, far from ended. Those upstart cousins of coal, oil and natural gas—they, too, are of the fossil breed—are gaining favor as energy sources. And there is the tremendous energy of the atom, now being harnessed in nuclear-electric plants.

New sources of energy, however, do not replace, but supplement existing sources. Their need is apparent. As Ontario's Minister of Energy, the Hon. Robert Macaulay, recently pointed out, the world will use as much energy in the next fifty years as it has during the last two thousand.

It would appear from this that our planet's need for coal might eventually outlive its coal resources. ■

# A POPULAR POWERHOUSE

**While the construction drama has ended visitors still flock to the St. Lawrence power development**

Ask anyone to name a leading tourist attraction in Eastern Canada and the answer is likely to be the Robert H. Saunders - St. Lawrence Generating Station.

It has, in its short lifetime, become a legend the wide world over, and tens of thousands of people make a point of visiting Ontario Hydro's powerhouse on the St. Lawrence each year.

In 1960, for example, more than 124,000 visitors toured the plant.

They came from Argentina, and they came from Zanzibar. People arrived from Burma, Brazil and British Guiana . . . from Holland, Hong Kong and Hungary . . . and from Pakistan, Paraguay and the Philippines. Name any country, and it was probably represented at Saunders last year.

W. P. Patterson, Plant Superintendent, has a theory about the attraction of Saunders.

"Almost all of the people who visit us have heard or read about the plant," he says. "They come to see whether it's true, and find it is."

No one was surprised when hundreds of thousands of people visited the project while it was under construction between 1954 and 1958—who would miss the chance of being a sidewalk superintendent on a world-renowned engineering project?

But they keep coming and coming, and the number of people who have visited the plant since

*(Continued on page 23)*



CHIEF GUIDE Murphy and the Misses Courville, Spafford and MacDonald find a moment of relaxation before the grinding summer session starts. During summer guides take visitors around the station every 35 minutes between 9 a.m. and 8 p.m. As many as 3,000 visitors have made the tour in a day.

## TIME OUT FOR BLOOPERS

All is not easy for the guides at Saunders G.S.

Among recent questions they have had to deal with are:

"Which crane do you use to lift the boats over the dam?"

"What do you do with the water left over after you've taken the electricity out of it?"

"Can I sign my name with the Queen's signature?"

"Is this the place where they charge the electric eels?"

But Chief Guide Art Murphy and his staff take them in their stride.

"When you meet such a large number of people, you can't miss getting the occasional oddball question," Mr. Murphy says. "The station is bound to raise comment. And some of them are real bloopers—but for every one of these, there are hundreds of more penetrating questions."

Guides Fay MacDonald, Leona Courville, Margaret Spafford and Jeannine Biccum recalled some of the reaction to Hydro's controversial mural.

It ranged from "That thing!" to "Brilliant success—magnificent."

"Most of the people who see the mural the first time find it beyond comprehension," the guides say. "But a second look often converts them."

They're amazed at the many people who come back again and again to look at it.

"Ourselves? We've seen it so often that it has grown on us. You can read so many things into it. We like it."

At any rate, the mural by Toronto artist Harold Town has done its job—it has become a key attraction among the many at the Saunders station. ■



These two "creatures" are playing a major role in the vast land-clearing operation underway at Little Long Rapids



THE "MONSTER", a giant 150-ton land clearing machine, displays its awesome power as it crashes through the woods, crushing all in its path. The "snake", right, its head visible in the hand of a survey crew member, has greatly simplified task of mapping contours of the headpond.

# the SNAKE and the MONSTER

by Don Carmichael

Now Showing: "The Snake and The Monster."

Added Attraction: "The Slashers."

Titles like these on a theatre marquee would be sure to pique the interest of most horror or science fiction film fans.

Were the movies said to feature two "snakes," one 400 and the other 500 feet long, a 150-ton "monster," and some 135 axe-wielding "slashers," the crush of the curious might batter down the doors.

All three are featured at Ontario Hydro's Little Long Rapids power development, 45 miles north of Kapuskasing, but the only audience is the silent wilderness.

They are being utilized in the mammoth task of clearing the headpond area for flooding in the spring of 1963. The locale is a limitless expanse of muskeg, forest, lakes and rivers in the isolated James Bay watershed.

The "snakes" are hydrostatic levels—a modern adaptation of a centuries-old principle used to indicate the position of the headpond contour.

"The Monster" is a giant land-clearing machine—believed to be the first of its kind used in Canada.

The "slashers", as they are popularly known, are individual contractors doing the same job.

Little Long Rapids is the first of three sites on a 15-mile stretch of the Mattagami River which will be developed by 1966. The headpond involves one of the largest land-clearing projects in Ontario Hydro's 54-year history—the largest was Caribou Falls, in northwestern Ontario, where 19,000 acres had to be shorn of brush and trees, and 550 miles of shoreline blazed.

Some 11,000 of the 17,000 acres scheduled for flooding at Little

Long Rapids have to be cleared, and 273 miles of shoreline along three rivers blazed.

To confine the waters of the headpond even to this area, a five-mile-long earth dyke is being built.

Largest earth-moving job since the St. Lawrence power project, it involves hauling about 4,000,000 cubic yards of earth and rock. Extending two miles west and about three miles east of the river bank, the dyke will have a maximum height of 60 feet.

Hydrostatic levels are thought to date back to the time of the ancient Egyptians. The Aztecs of Mexico, it is said, made them of hollow reeds.

Ontario Hydro's levels are a considerable improvement. One end of a long section of white plastic tubing is connected to the top of a U-tube containing mercury, which is mounted on a board with an index bar to show elevation level.

The tube, filled with an anti-freeze solution in winter to combat the intense cold, is trailed out to its full 400 or 500-foot length. A difference in the level of the mercury in the two arms of the U-tube indicates that the "head" of the snake is either higher or lower than the "tail." The instrument is then moved until the fluid in the U-tube is coincident with the index bar.

Called "snakes" because the tubing makes serpentine movements when dragged around trees, the levels have reduced costs and eliminated the time-consuming job of cutting down trees to establish a sighting line for conventional surveying equipment.

Two surveying crews of five men each are carrying out the contour blazing, which will be complete in six or seven months. The shoreline will be traced 30 miles up the Mattagami, 49 miles up the Kapuskasing River to within 10 miles of the town of Kapuskasing, and 37 miles up the Groundhog River. Flooding will raise the



OUTLANDISH SIZE and appearance of the land clearing machine are captured here as it topples tall trees. Its two, nine-foot-diameter rollers are 20 feet wide and studded with steel teeth. Crushed trees are not salvageable—timber of value must be harvested beforehand.



FROM THE AIR, the dense bushland stands out in stark contrast to the section of headpond area where the monster has roamed. It is visible, foreground, taking a breather. Land clearing at Little Long is second in area only to Caribou Falls among Hydro projects.



IN THE HANDS OF EXPERTS, power chainsaws make short work of brush and trees like this. As individual contractors the slashers are paid an agreed sum per acre. A rugged breed, they live the year round in the bush and are supplied by plane, boat and tractor.



TAKING A READING, this survey crewman sets the head of the snake in the snow. The hydrostatic levels are called snakes because of wriggling motion made by the 500-foot-long tubes when dragged around trees. These instruments have reduced survey costs considerably.

water 50 feet above the natural level of the river. The headpond will reach its maximum depth of 70 feet at the main dam.

"The Monster" is an apt nickname for the land-clearing machine, being used for about 2,500 acres in the more level and accessible areas.

Driven by electric motors powered by a diesel generator, it has big pusher-bars, mounted on both ends, which level brush and trees as it moves forward or backward. Two large, nine-foot diameter rollers, 20 feet long and studded with six-inch steel teeth, grind brush and trees into the ground and break them up.

Trees crushed in the machine's path are not salvageable, and any timber of value must be cut and piled by the slashers before it moves into an area.

The crushed material will be left on the ground and covered by water when the headpond is flooded. Most of it will become waterlogged and sink to the bottom. Floating debris will be picked up and boomed off into bays along the river.

Hydro subjected the machine to several months of testing at Little Long Rapids before deciding to buy it. Capable of clearing up to three acres an hour under ideal conditions, it proved adaptable to the terrain.

The bulk of the clearing is being handled by the slashers, a hardy breed of men who live the year round in the bush, moving their camps as they go.

As individual contractors, they are paid a fixed rate per acre by Ontario Hydro. The rate varies with the density of growth in each particular parcel.

At Little Long Rapids, Ontario Hydro has provided them with comfortable wood-frame dwellings, 10 by 16 feet, which are moved on timber skids pulled by a tractor.

Ontario Hydro brings supplies in to them by muskeg tractor and boat, but otherwise they travel on foot, carrying their gasoline-driven power chainsaws and axes with them.

An estimated 20,000 cords of pulpwood will be gathered from the headpond area. It is being sold to the Spruce Falls Power and Paper Company. Pulpwood is cut, piled and hauled by truck over snow roads to the rail siding at Little Long Rapids for shipment to the Spruce Falls mill at Kapuskasing.

A considerable amount of saleable timber will also be obtained. A sawmill has been set up by a contractor near the powerhouse location, and suitable lumber and timber are being cut for use on the project.

Flooding of the Little Long headpond will not end the usefullness of the snakes, or the monster and the slashers. The two other sites on the Mattagami remain, and Hydro's search for power continues. They may help roll up the curtain at other undeveloped hydraulic sites in the years to come. ■

# L'ONTARIO-HYDRO À L'AIDE

# ONTARIO HYDRO TO THE RESCUE





Au garage du Centre de service, les contremaîtres des équipes de l'Ontario-Hydro rencontrent THOMAS ALSTON, contrôleur général de la Sous-section construction et entretien à la Section aérienne de la T. & D. De gauche à droite, les contremaîtres, ALEX YORK, JIM McCRANK, LORNE FOBULER, FRED MURRAY. N'apparaît pas, SWEDE WIDMEYER.

•

In the garage of our Service Centre, crew foremen from Ontario Hydro meet THOMAS ALSTON, General Supervisor, Construction and Maintenance, Overhead Section of the T. & D. From left to right, foremen ALEX YORK, JIM McCRANK, LORNE FOBULER, FRED MURRAY. Not on the photograph is SWEDE WIDMEYER.

***"I am delighted that we had the opportunity of being of some assistance to you. I know that you would have done the same thing for us under similar circumstances."***

So read part of the acknowledgment of James S. Duncan, Chairman of the Hydro-Electric Power Commission of Ontario, to the letter of appreciation our President dispatched for use of 40 Ontario Hydro men for a week during the storm.

In similar vein, J. Mervyn Hambley, General Manager of Ontario Hydro, wrote to his Hydro-Quebec counterpart, our Léo Roy, stressing that ***"we were very pleased that it was possible for us to be of some assistance, and you can rest assured that we have complete confidence that, had the trouble been ours, you would have been just as willing and anxious to come to our aid."***

The last storm having made havoc of our system, the Management solicited help to make repair without too much delay. Answering the request of our President, Mr. Jean-Claude Lessard, Ontario Hydro immediately dispatched four linemen crews.

Upon their arrival in the City, these men were put to work at the most urgent points of our system. Their efficient contribution to our extensive repair task has been very precious and we wish to acknowledge it and express our most sincere gratitude.

JAMES A. PETERS, à gauche, contrôleur de district à la Section aérienne de la T. & D. dit quelques mots à une équipe de l'Ontario-Hydro sur les lieux d'une panne.

JAMES A. PETERS, at left, District Supervisor, Overhead Section of the T. & D. chats with a working party from Ontario Hydro, on the sites of a repair job.



This page has been reproduced, in part, from the April issue of "Entre-nous", employee publication of the Quebec Hydro-Electric Commission. We think it expresses the spirit of co-operation which should exist between utilities when the elements go on the rampage.



CHARACTER ACTOR Doug Master plays Abel Mack, a retired utility employee, who speaks for Hydro in "Yours to Command."



IN THE FILM, Abel tells neighors at a local ratepayers meeting that he never realized so many knew so little about Hydro.



TWO Ontario Hydro men from Woodbridge Area, pressed into service for film, prove Hydro has a heart by rescuing child from fire.

# YOURS TO COMMAND

## is a new, color motion picture that explores the heart of a great organization

"In all the years I worked for the municipal Hydro here, I never realized so many knew so little about so much affecting their very lives. . . ."

The speaker is Abel Mack, a charming, voluble, retired Hydro man whom you'll be meeting shortly as the star of a new color motion picture entitled "Yours to Command."

Soon to be released for viewing by employees of Ontario Hydro and the associated municipal utilities, the film is set in the school of a small Ontario town, where a ratepayers' meeting is in progress. Several dozen residents hear the manager of the local utility explain why a new sub-station is being built in the municipality.

Hard on the heels of his remarks comes a barrage of questions. What's the new sub-station for? What is it going to do? Who's going to pay for it?

Then, sparked by the remarks of an irate woman customer, the complaints start—as complaints always will when people don't comprehend a situation.

Into the discussion comes Abel Mack, who has been quietly listening to the questions and answers provided by the utility manager. A man who knows his subject thoroughly after 36 years with the local utility, Abel forcefully makes the point that all too few of us know much about the Hydro organization, how it was formed, what makes it tick, why it is so unique and, at the same time, so successful. And all this in spite of the fact that it provides a vital, daily service.

In "Yours to Command" there's a message for every employee in the Hydro family. Any man or woman who works for an organization like this can take pride in it for, as Abel Mack so eloquently puts it:

" . . . Hydro is all of us—and all of us, all over Ontario, are Hydro. As we grow, Hydro grows. And Ontario grows . . . to new wealth, and stature and well-being, with every passing year."

The Hydro employee—Hydro customer relationship is explored also, although the film never gets around to preaching about it. Implied is the philosophy that employee and customer are real people and, as such, should be willing to make allowances at times.

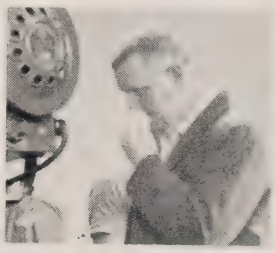
"Yours to Command," is, best of all, a pleasant way for utility and Ontario Hydro employees to take an objective look at themselves and their organization. The fact that outsiders may look upon Hydro as a cold, impersonal organization may have escaped many of us.

The point is that Hydro is not this at all. When an Ontario Hydro helicopter spirals in to a landing and its two crew members give help to the victim of a car



IN ANOTHER SEQUENCE, a Hydro helicopter rescues an injured motorist. The plane is shown landing at the scene of the accident while camera crew records action.





MAKE-UP is retouched during pause in hectic pace of film-making. Director, right, makes use of the interval to think out requirements for his next sequence.



SETTING THE SCENE for main film is task of Barry Morse, well-known Canadian Actor, who serves as master of ceremonies. He is shown on location during production of prologue.

accident; or when a burly utility lineman enters a smoke-filled barn to rescue a little girl; here is Hydro at its best. Here is the warm heart of the Hydro organization—its people.

"Yours to Command," while primarily intended for Municipal utility and Ontario Hydro personnel, was also produced for the public. It may eventually be distributed to television stations and motion picture houses as well as circulated to service clubs, schools and other organizations.

In the meantime, employees will see it first.

Produced by Jam Handy of Canada Limited for Ontario Hydro, the film uses professional actors in most scenes. However, in scenes shot in and around Hydro property, members of the staff are seen at work.

All in all, "Yours to Command" is an informative and exceedingly entertaining 25 minutes of motion picture—don't miss it when it comes your way. ■

## WARMING UP THE AUDIENCE

BARRY MORSE, a talented Canadian dramatic actor, will be the master of ceremonies when *Yours to Command* is shown to Ontario Hydro and municipal utility employees.

Appearing through the medium of a 10-minute, black and white prologue to the main picture, Mr. Morse's job will be, in effect, to warm up his audience to the purpose of *Yours to Command*.

The introduction is aimed at opening the minds of the audience to the message *Yours to Command* contains by getting them thinking of themselves as public representatives of Hydro.

The charming and articulate Mr. Morse was a good choice for the job.

First he poses the question: Just what is public relations? Then he supplies a definition and indicates how the viewpoints of members of his audience will vary.

Finally he uses a simple but effective audience participation technique to indicate that, regardless of what definition of public relations you care to use, there is no doubt that it is an important job in which every employee has a share.

Designed to increase audience receptiveness, the introduction will enable *Yours to Command* to impart its message in an atmosphere primed to receive it. ■



OLD FRIENDS gathered in tribute to James S. Duncan on occasion of his retirement. He is shown admiring gifts of fine Steuben crystal. Group includes, from left: F. G. York, president, A.M.E.U.; J. M. Hambley, Ontario Hydro's general manager; Mr. Duncan; Chairman-elect W. Ross Strike and Dr. V. S. Wilson, president of the O.M.E.A.

# FAREWELL TO A CHAIRMAN

In a night of tribute to James S. Duncan, Ross Strike said there were two things about the retiring chairman that had particularly impressed his fellow Commissioners—his readiness to meet a challenge and his insistence on perfection.

Mr. Strike, Ontario Hydro's new chairman, was presiding at a testimonial dinner in Toronto for Mr. Duncan. Some 60 old friends from the O.M.E.A., the A.M.E.U., and Ontario Hydro's senior management attended the dinner to pay tribute to Mr. Duncan and wish him success in the years ahead.

Mr. Strike said Mr. Duncan was always ready to take up a challenge —as witnessed by the fact he had not faltered when offered the chairmanship of Ontario Hydro.

"And he is never satisfied with the second best," Mr. Strike added. "He always insisted on the best, whether he was doing something himself or whether someone under him was doing it."

On behalf of the O.M.E.A., Dr. V. S. Wilson, president, expressed a sincere tribute to Mr. Duncan for the enthusiastic and vigorous manner in which he had tackled the job of chairman.

Speaking for the A.M.E.U., Fred G. York, president, paid tribute to Mr. Duncan, "who has consistently recognized the depth and closeness of the tie between the municipal systems and Ontario Hydro."

Mr. York expressed disappointment that Mr. Duncan "has decided to retire from the field of what we might call formal employment—although I'm sure there are better descriptions. I expected that Mr. Duncan would have been persuaded to represent Canada in the ambassadorial field."

The Hon. Ray Connell, Minister of Public Works in the Province of Ontario, proposed the toast to Mr. Duncan on behalf of Prime Minister Leslie Frost, who was unable to attend. He said the people of Ontario were extremely fortunate in having a man like Mr. Duncan as chairman of Ontario Hydro, and reiterated the words of Mr. Frost when he announced the resignation:

"James Duncan, I think, will be assessed as one of the great, unselfish Canadians who have served our country well."

J. M. Hambley, Ontario Hydro's General Manager, conveyed to Mr. Duncan the thanks and appreciation of the staff "for the truly outstanding contribution he has made to the organization which we serve."

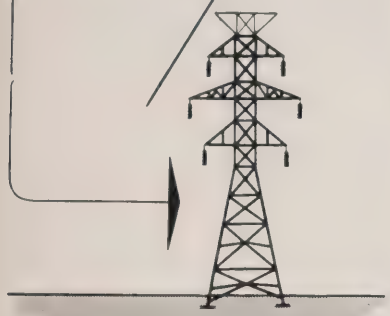
Responding, Mr. Duncan said he considered it a privilege to be at the dinner, "surrounded by my valued colleagues of the Commission, by the stalwart partners of Ontario Hydro, the executives of the O.M.E.A. and A.M.E.U., and last, but not least, by those who form the backbone of this organization, the management, the senior staff, and the personnel of Ontario Hydro."

One of Mr. Duncan's last messages to Ontario Hydro was to ask it "to nurture our good relationships with the municipal utilities.

"Let us lean heavily on our two sister organizations, the O.M.E.A. and the A.M.E.U., who have played such an important role in the growth and development of Ontario Hydro.

"I do strongly believe that our continued success depends upon it. And let me hasten to say that, with the appointments of Ross Strike as my successor, and with the able assistance of Bud Cliff and Colonel Kennedy, I have every confidence that this valued relationship will be maintained." ■

# ALONG HYDRO LINES



## Dundas P.U.C. builds for future

A gleaming new office and administration building is scheduled to replace the small red brick structure on King Street which has served as headquarters for the Dundas Public Utilities Commission for 45 years. The new $100,000 building is expected to be completed by the end of the year.

Expansion plans also provide for a new $50,000 service centre at the corner of Brock and Park Streets where the pole yard is now located.

The administration building will be a modern, two-storey structure, 52 feet wide and 70 feet long. It will be constructed of white brick and feature an attractive front of fieldstone, black "spandrel" panels and thermal glass.

The building will incorporate the latest in illumination and electric heating and cooling.

Plans for the service centre have not been completed, but it is expected to be a single-storey, quonset-type building. It will include a dispatching area for vehicles, clerical offices and facilities for maintenance and storage.

Commenting on the progressive step, Dundas P.U.C. Chairman M. T. Jaggard said that the old facilities were totally inadequate for present operations. He said that 600 new customers had been added through annexation last year, and that the town's population of 12,500 was expected to double in 10 years.

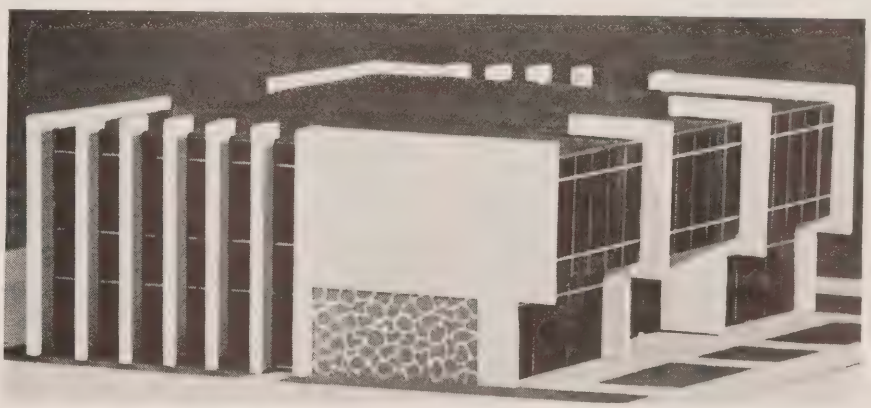
"During past years," Mr. Jaggard said, "the Public Utilities Commission has grown right along with the town. Now it has provided for the challenge posed by the future."



## Employees Honored

THE 15TH ANNUAL dinner and awards night of the Stratford Public Utilities Commission, held recently, was attended by some 150 utilities members and their wives.

Four employees who had reached the retirement age were presented with pieces of luggage. From left to right in the photograph, they are Thomas Sansom, 36 years in the Service Department; Harold Casson, 38 years in the Electric Department; Harold Duggan, 34 years in the Service Department, and Orville Hill, 21 years with the Works Department. They are admiring gold watch presented to Robert Butler, right, for 25 years of continuous service. ■



Model of the proposed new Dundas P.U.C. administration building.

# municipal briefs

**London P.U.C.** has approved a record Electrical Department operating budget of $5,925,800 for 1961. In addition, more than $4¼ million will be required to purchase Ontario Hydro facilities in the recently annexed area. Major capital construction items include $327,000 for substations, $265,000 for overhead and undeground distribution systems, $229,600 for transformers and additional amounts for street lighting and other extensions and improvements.

**Perth P.U.C.** intends to spend $79,255 during 1961 for improvements which include a $38,000 substation.

**North Bay H.E.C.** will spend $159,000 this year on extensions and improvements. Water heaters for rental purposes will cost $25,000; substations $22,000; and distribution system $96,500.

**North York Hydro** commissioners and planning board members recently received a $500 increase in remuneration. Hydro commissioners now receive $1,500 annually.

**Simcoe P.U.C.** capital expenditures will total $79,000 in 1961, including the addition of a fourth substation at a cost of $45,000.

**Oshawa P.U.C.** estimates its 1961 capital expenditures at $470,854. Major items include $135,600 for distribution system; $119,000 for the purchase of water heaters; and $56,000 for a new sub-station.

**Scarborough Township P.U.C.** will change the electrical service requirements of apartments from a four-wire system to a seven-wire system. The utility expects to save $28 on every meter installed in an apartment building under the new regulations.

**Etobicoke Township H.E.C.** has announced a capital works program of $1,570,650 for the year. Much of this will be used to construct lines and sub-stations to provide service for an estimated 3,000 new customers. An additional $330,000 has been earmarked for an underground wiring installation in a prestige commercial area, and to place about 3.3 miles of feeder line underground to eliminate any overhead wires in future subdivisions where service is supplied from the back yard. Recent studies relating to the feasibility of placing overhead wires underground in the business section indicated that the cost would be prohibitive. To convert the four main commercial streets in Etobicoke would cost an estimated $10,000,000.

**Fort William H.E.C.** will spend $293,200 on capital expansion in 1961. This will include $80,000 for the purchase of water heaters, $122,000 for distribution system, and $60,000 for street lighting.

**St. Thomas P.U.C.** will pay Ontario Hydro $133,818 for the purchase of distribution facilities in an area recently annexed by the city. The facilities served 821 customers.

**Preston P.U.C.** has agreed to purchase all low tension lines within the municipal boundaries from Ontario Hydro at a cost of $62,587. Payment will be made in 10 equal yearly instalments with interest at 5 per cent per annum on the unpaid balance.

**Port Arthur P.U.C.** plans to carry out a general face-lifting program expected to cost $78,000, at its main headquarters building during 1961. Work will include an exterior scrubbing and structural changes in the ground floor windows and entrances.

**Port Elgin H.E.C.** is offering its domestic customers a three-wire service on the instalment plan. It estimates that the cost of such installations will vary from $100 to $150 for the average dwelling. The decision followed a survey which indicated that many older homes were unable to accommodate new appliances because of inadequate service facilities. Under the financing plan, customers can pay for the installation on their regular hydro bills, amortized over a period of up to two years, bearing interest at five per cent. Response has been very satisfactory.

**South River** ratepayers recently voted decisively to purchase the distribution system of the South River Electric Company and to obtain their power requirements from Ontario Hydro. Debentures totalling $90,000 will be issued to cover purchase and system improvements. A committee of Council will operate the system. The village had received its power from the family-owned company since 1909, and Ontario Hydro has agreed to purchase the output of its generating facilities.

**Rate revisions,** effective or approved during 1960, were made by 67 Hydro municipalities. Forty of these were decreases. Of the 27 utilities which increased their rates, only nine were in excess of 10 per cent, with the highest being 19.7 per cent. Rate adjustments for 1961 have recently been announced by the Bloomfield, Iroquois and Arnprior hydro utilities. All are designed to provide more revenue. ■

# letters to the editor

Dear Sir:

The January, 1961, issue of the "Ontario Hydro News" contains an interesting article entitled "Shining Suburb" by David H. Pope of the Sandwich West Hydro System.

The promotion of individually-owned lawn lights as a substitute for residential street lighting is discussed, and, while this is a worth while promotion effort and provides an attractive form of decorative lighting for residential areas, the AMEU do not consider that it should be regarded as a substitute

for street lighting, the requirements for which are set out in C.S.A. Standard C92-2-1956, Canadian Standard Practice for Street and Highway Lighting.

Lawn-lighting does not provide the levels of illumination required for streets and, in fact, can give rise to some hazardous conditions, such as low-level glare and shadows in the thoroughfare (caused by) vehicles parked at the curb.

As the installation of this type of lighting appears to be gathering some momentum, it was felt that this should be brought to your attention.

W. R. Mathieson,
Manager, A.M.E.U.

## A.M.E.U. MANAGEMENT CONFERENCE

A business and social agenda of exceptional interest has been prepared for the Conference Designed for Management of the Association of Municipal Electrical Utilities, June 7 - 10, at Queen's University, Kingston.

Among the conference highlights will be a labor session in which several leading authorities will participate. Labor law, legislation, conciliation and arbitration will be covered.

Duplicate technical sessions designed to meet the needs of large and small utilities will deal with a wide range of subjects. A few of these include load-building, system design, protective practices, economics of underground distribution, two-way radio communication and tree-trimming.

An evening "buzz session" will be devoted to discussion of the proposed amalgamation of Ontario Hydro's northern and southern systems. On hand to explain the complex problems inherent in such a merger will be I. K. Sitzer, Ontario Hydro's assistant general manager, Production and Marketing, and E. H. Banks, assistant general manager, Finance.

An interesting program has also been planned for delegate's wives. ■

### Utility secretary dies suddenly

Lt.-Col. James Turnbull, 62, a veteran of two world wars and secretary of the Peterborough Utilities Commission, died recently at the wheel of his parked car. He had been in poor health for some time.

Born in Belfast, Col. Turnbull came to Canada in 1915. He served with the 8th Cobourg Battery in World War I, and was wounded in France. During World War II he was sent to Britain as second-in-command of the Stormont, Dundas and Glengarry Highlanders, and he later commanded training units in Canada.

Col. Turnbull joined the Peterborough utility in 1928 as chief clerk, and he became secretary in 1953. He is survived by his wife and a son, James, both of Peterborough.

### A POPULAR POWERHOUSE

*(Continued from page 13)*

completion has been an eye-opener.

"We're continually surprised at the fantastic number of people visiting the plant," says Mr. Patterson. "We get up to 60,000 in one month."

To Pat Patterson—Superintendent of the Cameron Falls station on the Nipigon River for nine years before he arrived in Cornwall—a powerhouse is a powerhouse wherever it is.

"Except this one. In Cornwall, the station is a great tourist attraction—we get more tourists here than they get at the Niagara stations."

Hydro goes out of its way to make visitors welcome.

During the tourist season, for 11 hours a day and seven days a week, Hydro guides take visitors around the station every 35 minutes.

They can see a 28-minute color movie describing construction of the plant. They see the Observation Lobby—commonly known as the Penthouse—which houses Hydro's controversial mural. And they can see a working hydraulic model of the powerhouse, and the station's control room.

Many of the visitors are so impressed they'll sit down and write their thanks after they return home.

Hidehiko Nomi of the Japan Atomic Energy Research Institute said of his visit: "The experience was very enlightening for me, and very useful in designing and constructing our facilities."

Professor A. N. Murray of the University of Tulsa: "We were made to feel that we were guests, rather than just tourists viewing a truly great piece of engineering."

A British Baronet: "The process of making the public aware of the magnitude of the St. Lawrence Power Project is entirely effective, and for this I compliment you."

And the Wisconsin businessman: "I have almost exhausted my vocabulary telling all my friends of this unbelievable project."

Whatever their reaction, the plant creates a talking point.

As one Quebec resident said: "We are somewhat embarrassed at the one-way flow of visitors from Montreal to Cornwall," adding that he knew of hundreds who wanted to make the trip again.

Perhaps that's the secret of Saunders.

People remember it, and come back for a second look. ■

### Chief accountant dies at Guelph

Harold W. Holden, chief accountant of the Board of Light and Heat Commissioners of Guelph, died recently at the age of 33. He had been ill less than two days.

Mr. Holden was born and educated in Toronto, and at one time served with Scarborough Township P.U.C. as assistant to the chief accountant. He joined Guelph hydro in July, 1959, and was appointed chief accountant in January, 1960.

Among those bereaved by his untimely death are his wife, three children, and his parents.

### Plant superintendent retires at Orillia

Forty years of service terminated with the recent retirement of Norman Stroud from the Orillia Water Light and Power Commission. Born at Forest Home, Mr. Stroud was superintendent of the Minden generating station for much of his career.

### Former Hydro engineer dies in Mexico

Guy C. Parker, who was consumer service engineer of Ontario Hydro's West Central Region at his retirement in 1954, died recently in Mexico. He was 72.

Mr. Parker was born in Nova Scotia and educated at Dalhousie University and the University of Toronto, graduating with a master's degree in electrical engineering in 1916, and in civil engineering in 1919.

He is survived by his wife, Ethel, and a daughter, Mrs. George Bowman.

### Hydro personnel officer loaned to government

Liaison Personnel Officer H. A. D. Scott of Ontario Hydro's Employee Relations Division has been loaned to the Royal Commission on Government Organization —popularly known as the Glassco Commission. He will serve in Ottawa from April to the end of the year.

## press comment

THE Toronto Star recently had this to say on the subject of identical bids on electrical tenders:

"The electrical industry, badly jolted by combines investigations in the past, is in for another shock.

"Combines sleuths are quietly collecting evidence of identical bidding—principally on municipal tenders for electrical fixtures—that is expected to lead to a full scale inquiry into operations of some members of the industry."

The Star said that D. H. Henry, director of investigations, had received a complaint from the Toronto Board of Education that it had received identical tenders for some 29,000 bulbs and lamps. Mr. Henry indicated that the Toronto complaint was only one of many his branch was investigating across the country.

The paper quoted a speech the director had made to electrical distributors in Quebec City. . . .

"I warn you not to be misled by any reports of supposed inactivity or indifference to alleged complaints of collusion or price-fixing in the submission of public tenders."

He is also said to have warned that because there was no evidence of collusion in a particular case to warrant proceedings at present, the branch would still keep an eye on the case.

"There is no time limitation on the use of such material under the Combines Investigation Act, and, at some time in the future, material accumulated in what may appear to be an innocuous case today, may, in the light of additional information, become relevant."

The Star said he invited public bodies to submit to the combines branch cases of identical tenders.

SPEAKING later at a convention of the Canadian Welding Society, J. W. Kerr, president of Triangle Conduit and Cable (Canada), is quoted by the Toronto Star as saying the wire and cable industry was being investigated again by the Restrictive Trade Practices Commission.

According to the Star, Mr. Kerr said this company had bid on 98 items, all at prices listed in a published book. Other companies obviously did the same, he added.

"Unless orders are for substantial quantities of standard materials," he suggested, "nothing is to be gained by asking for tenders, and the interested purchaser might consider using the price lists which are available.

"This would considerably reduce their paper work, accelerate their ability to procure the material, and would lessen the opportunity for maligning industry. In addition, it would give our salesmen an opportunity to stress such things as quality and service, taking the emphasis off price."

Mr. Kerr is also president of the Canadian Electrical Manufacturers' Association.

WRITING in the Toronto Telegram recently, J. Herbert Smith, president of Canadian General Electric Company, gave his views on the subject of identical tenders being submitted, on occasion, to municipal and provincial utilities by Canadian electrical manufacturers.

. . . "There is a great deal of public misconception in this field," he said, "and I believe industry generally should shoulder the responsibility of explaining its position.

"As a company, we are, naturally, disturbed by any inference of collusion when prices identical to our own bid have been quoted on a tender by one or more of our competitors.

"I want to emphasize, in the beginning, that identical prices are not illegal in themselves and, indeed, there are very valid competitive reasons for prices being identical." Mr. Smith explained that

# OFF THE WIRES



Is the day of the aerial ladder truck for the maintenance of street lights nearing an end?

* * *

A British company has developed a street lighting column that bends in the middle for easier maintenance. Called the "Jacknife", the pole has a hinge half-way up to make the lighting fixture accessible from the ground.

* * *

The weight of the hinged section is taken by a counter-balanced spring housed in the column just above the hinge, and it is operated by a worm and wheel acting through a screw push rod. This, in turn, is operated by a standard quarter-inch electric hand drill plugged into the base supply.

* * *

The manufacturers say the column should more than halve conventional maintenance costs. It can be set to work sideways, and other models are being designed for double-arm brackets to go on dual highway centre strips—or medians as we call them today.

* * *

Someone at Trenton P.U.C. with a poetic bent has developed a neat and gentle way of indicating to delinquent customers that their electric and/or water services will be cut off unless payment is immediately forthcoming.

* * *

The final statement includes a poem which reads as follows:

*"We are willing servants and*
*we like to work for you,*
*To wash, cook, and keep*
*things bright as new;*
*We'll shine, we'll splash, we'll*
*dash about with glee,*
*But we cannot keep on doing*
*it, if we're doing it for*
*free.*
*Because we have to build our*
*lines and mains and pay*
*taxes too,*
*And all the other things it*
*takes to bring us there to*
*you,*
*So if your bill you have*
*forgot, or put upon a shelf,*
*Please send your cheque in*
*right away to stop turning*
*off ourself.*
*And if connection charges*
*you do not wish to pay,*
*Contact us as . . . is the very*
*last day."*

Not long ago, the Trenton utility received an overdue account accompanied by a poetic reply which read:

*"I am extremely sorry for*
*this delay,*
*It is not that I could not pay*
*But rather that I was away*
*When your letter did arrive.*
*And as your notice was in*
*verse,*
*Then so is mine, but prob-*
*ably worse,*
*And so I dig into my purse,*
*To pay this bill at once.*
*One more thing may I men-*
*tion here,*
*Apologies for bending your*
*ear,*
*But your reminder is with-*
*out peer,*
*It will not happen again.*
*We love to have you shine*
*and splash and dash about*
*with glee.*
*Life would be pretty miser-*
*able without your com-*
*pany.*
*So here's your cheque and*
*what the heck,*
*We're seldom ever late,*
*We like to get that discount,*
*We think it's really great."*

* * *

The Canadian Standards Association recently announced that it had completed its 42nd year of service to Canada. The Association now has an all-time membership of 3,600, and is justifiably proud of the fact that, during the past year, its members were engaged in 616 projects and that 40 new standards were issued.

---

prices of the tenderers may themselves be identical, and the firms, unwilling to better such prices, may simply quote them in making the tenders.

The C. G. E. president quoted from the annual reports of T. D. MacDonald, former Director of the Investigation and Research Branch of the Federal Department of Justice:

. . . "In the case of bulk products of standard quality that are ordinarily traded in large quantities, it is ordinarily to be expected that the trade prices of different suppliers in a given market will be the same at any given time; because if one supplier were even fractionally higher per unit of weight, the difference on a full order might be enough to deprive him of any business.

"The real significance in such circumstances lies not in identical prices but in the manner by which they became identical: i.e., whether by collusion or by all suppliers being forced to adopt the lowest price that is individually set."

Mr. Smith noted that the Canadian Electrical Code, which is enforced by the Provincial Governments, sets the safety standards for electrical products, and forbids the sale of products which do not meet these safety standards.

"This situation tends to force identical price lists," he said, "because customers are unwilling to pay for quality or features beyond the legal safety standards."

It's

# SUPERMARKET IN YOUR HOME

Time







## May 15th to June 30th

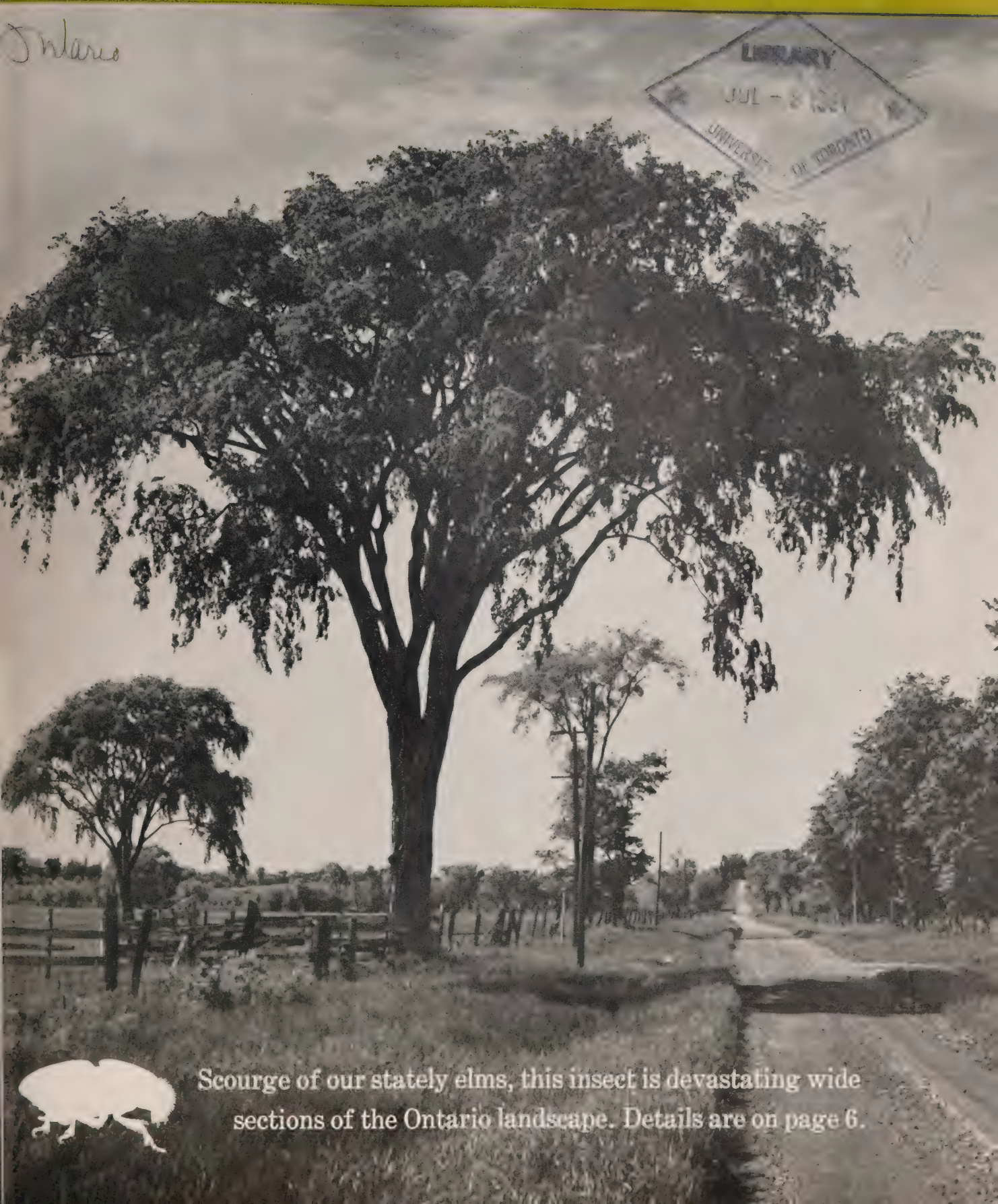
In other words, many thousands of Ontario families will be making an even greater friend of electricity by taking on a new domestic help . . . a time-saving, money-saving, and delightfully convenient electric home-freezer. And by purchasing from a wide and wonderful range of freezers — upright, chest-type or combination — they'll be off to a good start with a free $20 worth of frozen foods.

Off to a good start. That's Operation Eskimo all over. Supported strongly by Ontario Hydro, Municipal Electric Utilities, Manufacturers, Distributors and Dealers, it holds promise of lasting benefits all 'round.

ONTARIO HYDRO NEWS JUNE, 1961

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Scourge of our stately elms, this insect is devastating wide sections of the Ontario landscape. Details are on page 6.

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# ONTARIO HYDRO NEWS

JUNE, 1961 VOL. 48, NO. 6

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## ABOUT THIS MONTH'S COVER

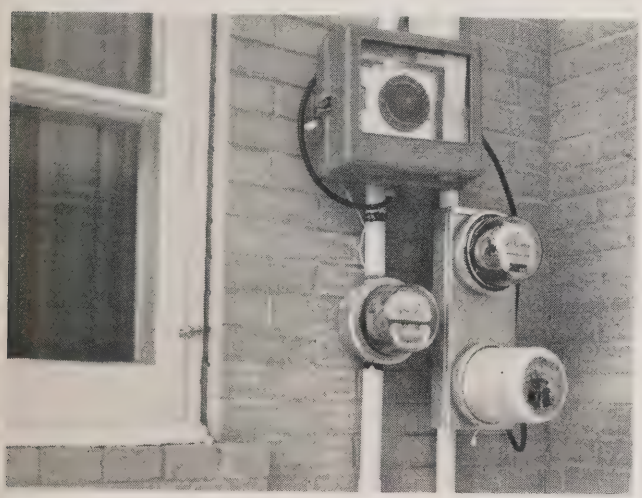
SKELETONS of once proud elms like the one on our front cover now dot the Ontario landscape—victims of Dutch Elm Disease. But we can't blame the Dutch. Carrier of the deadly fungus is the beetle outlined on the cover, and he originated elsewhere. Details are on page 6.

# ELECTRIC HOUSE HEATING UNDER THE MICROSCOPE

THE superior performance of modern electric heating has been well established but Ontario Hydro and the municipal utilities have not been serving this load long enough, or in sufficient quantity, to properly assess its impact on the supply systems of the province.

To help overcome this deficiency, Ontario Hydro, in co-operation with the Association of Municipal Electric Utilities, has undertaken two house-heating surveys which are now being processed.

Punched tape records were obtained by the Research Division over a five-month period on twenty electrically heated homes in a number of Toronto district municipalities. The load data were transferred onto punched cards to obtain the coincident demand of the twenty homes, and an extensive analysis is being carried out to determine the relation of kilowatt-hour and kilowatt demands to local weather conditions.



Bottom photo shows one of 20 electrically heated homes in the Toronto area metered for a five-month period last winter. Punched tape demand recorder and pulsing watt-hour meter, top, were used to keep a continuous record of the heating load during that period.

In addition to studying the local costs involved in servicing the home heating load, it is important to learn something of the effect of this load on the wholesale cost of power. To this end, survey 'Syno' was launched with 74 Ontario Hydro area offices and 66 municipal utilities participating. Specifically, Syno is expected to indicate the effects on coincident heating demand of weather diversity and severity over the province.

Thanks to the large number of co-operating utilities and rural areas which had installed thermal demand meters on residential heating loads for informational purposes, it was possible to obtain simultaneous readings, involving 326 homes across the province, twice a day on the days of test. Four Syno "runs" were conducted and, fortunately, readings were obtained on the day and time of the Commission's annual system peak, and also during the very severe cold spell in January.

This information has also been transferred to punch cards, and is now being correlated with weather data from the major meteorological stations in Ontario. While the analysis is not yet complete, there is evidence that considerable diversity exists among the heating loads even in extremely cold weather.

When this voluminous data has been thoroughly digested, the Commission and municipalities will be in a position to formulate a sound rate and metering policy which will ensure fair treatment of both the customers and utility. Recommendations in respect to rates and metering are expected to be forthcoming this summer. ■



# A BRIDGE



*photos courtesy Canadian Homes*

UPPER CANADA VILLAGE is history at the fingertips, an epic picture of the early 19th century. Visitors who enter it are enveloped by a sense of living in the past—a feeling of having actually been there.

# that leads to the past

*The restorers of Upper Canada Village have accepted no compromises in creating a living, breathing pioneer shrine*

by Gary Smith

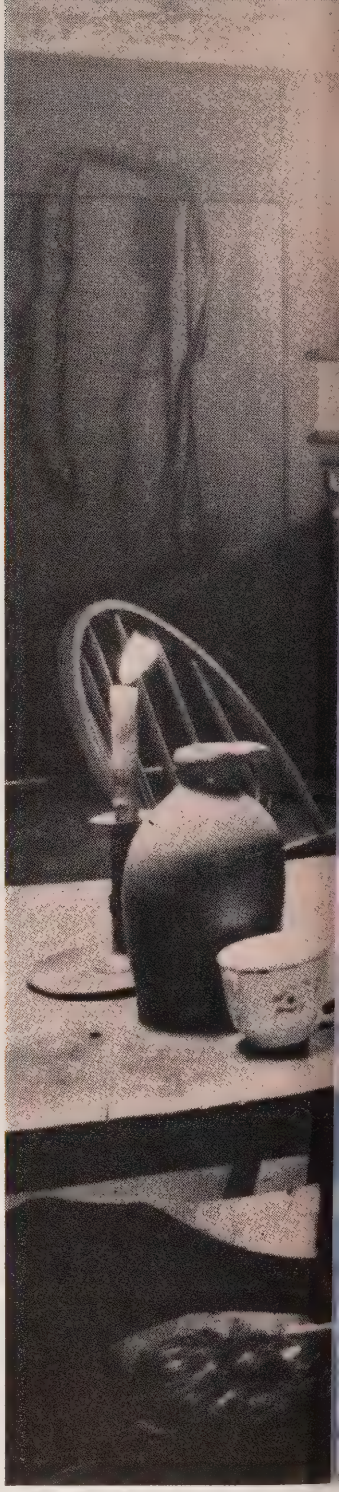
SPANNING a small creek near Morrisburg in eastern Ontario is a simple wooden foot bridge that is half 19th century charm and half time machine.

While there is nothing unique about it, structurally, the bridge was designed for a very special job. When it opens later this month, it will be to convey tourists and vacationers back some 150 years in time to a pioneer era in eastern Ontario history.

For this bridge is the entrance to the Ontario-St. Lawrence Development Commission's new Upper Canada Village—as exciting a museum of pioneer life as has ever been assembled in Canada.

Unlike the famous Williamsburg, Virginia, which is a modern-day, albeit excellent, copy of colonial life, Upper Canada Village consists of actual buildings, furnishings and household effects once owned and treasured by early 19th century Canadians.

In Cook's Tavern, one of the



centres of attraction in the village, the very walls whisper of an era when the original owner, Michael Cook, a sturdy United Empire Loyalist, was host each night to travelers on the rugged King's highway.

In the tiny schoolmasters' cottage, a visitor may conjure up the image of small boys huddled over slates and ancient textbooks while



the master, a retired army officer, grits his teeth against the agony of an old wound and raps his birch rod against the calf of his boot.

There is the Glengarry School House made famous by the books of Ralph Connor, and a woollen mill dating back to 1845 which will manufacture woollen blankets. There is an Anglican Church, some 125 years old, hard by a house once occupied by a Lutheran pastor in 1845.

The manifold task of dismantling, moving and restoring buildings, collecting furnishings, and bringing Upper Canada Village into being actually began in 1955 with the formation of the Ontario-St. Lawrence Development Commission.

Commission Chairman George H. Challies likes to recall how residents of the eastern counties reacted to the announcement that work was to begin on a United Empire Loyalist pioneer museum.

"They came forward by the dozens to contribute old furniture, utensils, dishes, maps, manuscripts —in fact thousands of valuable relics. It must have been hard for



LOOKING MUCH as it must have looked in 1860 is the Glengarry Schoolhouse rendered immortal in the stories of Ralph Connor. The tardy little miss, racing to class, seems straight out of the past.



*Milne*

GEORGE H. CHALLIES (above), Chairman of the Ontario - St. Lawrence Development Commission has had the help of some very dedicated people in restoring the Village. Below, Audrey Spencer, Jeanne Minhinnick and Peter Stokes.



some to part with these rich old treasures, yet they did, and Upper Canada Village is by far the richer for it."

Mr. Challies also recalls the assistance provided by Ontario Hydro. When the house-moving program began in 1957, Ontario Hydro itself was involved with a massive house-moving project of its own, undertaken as part of the St. Lawrence Power Project rehabilitation scheme.

Mr. Challies says Ontario Hydro pitched in to provide valuable counsel and assistance for the Village moving program.

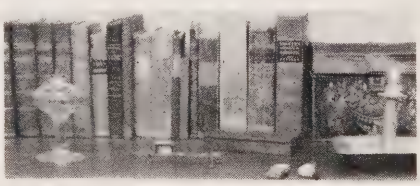
For people like Mr. Challies, a former minister of the Ontario Government and once a vice-chairman of Ontario Hydro, the task has been a labor of love. It has been the same for Dr. Jack C. Carroll, vice-chairman, and James A. C. Auld, M.P.P. for Leeds, Mr. Challies' associates on the Commission. All three have provided inspired direction and leadership to a staff which last winter numbered almost 300 people.

It is a job that has required diverse skills. Carpenters, plasterers, masons, draftsmen, electricians, a blacksmith and a cabinet maker, among others, have helped put the village together from buildings and relics gathered from across eastern Ontario.

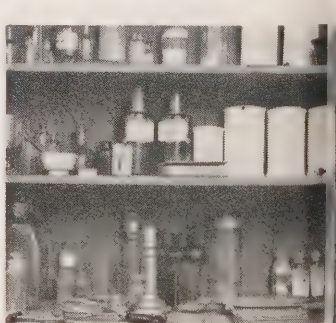
When it came to restoration, the Commission was firm. There was to be no compromise, it said, in putting the buildings in shape and in redecorating and furnishing them. For people like Ron Way—the able curator of Kingston's famous Old Fort Henry museum and the man who directed the restoration of the village—there

EVERYWHERE one looks there is the sight, the feel, the smell of history.











Only the costume, though historically accurate, is a copy. Furnishings and utensils, like the very walls of the Hired Man's House are the original, restored in beauty and function.

were months of research, of gathering and collating old records.

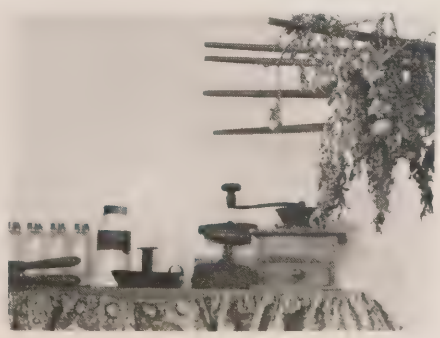
In some homes the original wallpapers were cleaned and restored. For others, where the paper could not be saved, the Commission went hunting, eventually located the English manufacturer who exported to Canada in the 19th century, and got him to reprint a fresh supply from original 100-year-old woodcuts.

For practical purposes, the Commission installed basements and central heating under some of the old buildings to protect them from temperature extremes. Yet, visitors won't see the heating vents. All are carefully masked.

The restoration is now virtually finished. In the last few months, the work has gone ahead in an atmosphere of anticipation as the time for the official opening of Upper Canada Village approaches.

It should be a gala event for those who have worked to bring it into being as well as the thousands of visitors in years to come who will step across the bridge and see the past preserved in a breathtaking fashion. ■





# THE BATTLE MEMORIAL

*Distinguished guests at a distinguished opening.*

CRYSLER FARM Battlefield Park, of which the Upper Canada Village is a part, is as much a tribute to the British and Canadian soldiers who helped defend Upper Canada as it is to the settlers who made it their home.

The 2,000-acre park is named for one of the decisive battles of the War of 1812—the Battle of Crysler's Farm, which, on November 11, 1813, determined Canada's destiny as a free nation within the British Commonwealth.

In the Park is a handsome memorial to the regular troops and militia who, on that day, defeated an invading American force and prevented the capture of Montreal.

The setting for the memorial is a 40-foot terraced mound reached by a 600-foot-wide mall stretching 1,600 feet shoreward from the highway. At the top of the mound stands a monument to the victorious British and Canadian forces.

At its foot is a Battle Memorial building, a combination walled garden and roofed structure containing two "Courts of Honor"—one British and one Canadian. Each displays tablets commemorating the British and Canadian regiments. Uniforms, maps, descriptions of the battle and other curios are also to be found here.

Impressive and colorful ceremonies were to mark the opening of both the battle memorial and Upper Canada Village itself. Among the distinguished guests were to be Sir Gerald Templar, representing the British Army and ranking officers from both the

*(Continued on page 22)*

*The ravages of Dutch Elm Disease are being felt by Ontario Hydro and municipal utilities in many parts of the Province*

**a killer named**

# CERATOCYSTIS ULM

by Mike Sullivan



OUT ON A LIMB—The atlas crane safeguards this forester at work high in an elm in Central Region, where trees have been hit hard by the insidious Dutch Elm Disease.

A CREEPING fungus that rots the core of Canada's lordly elm tree is devastating the landscape throughout vast sections of Ontario.

The dread ceratocystis ulmi causes Dutch Elm Disease—an affliction as incurable as cancer. Since it was discovered in North America 33 years ago, the disease has cut down elms at an average rate of more than 1,000,000 a year.

It is considered so destructive that a move was once underway in the United States to have it declared a national emergency. In 1934—10 years before it even hit Canada—the Federal Department of Agriculture issued a pamphlet warning about the scourge.

It has been estimated that 200,000,000 trees in towns and cities throughout North America may fall prey to the fungus—and the cost of uprooting the corpses could be more than $15,000,000,000.

The mature, high-branching elms, that spread through many Ontario communities like lines of gothic arches, have little defence against the disease. Once the fungus penetrates, the tree dies fast.

Pinpointing the disease, Dr. James Reid of the Canadian Department of Forestry says it is widespread in Ontario south of a line drawn between North Bay and Pembroke. There are also isolated cases through to Sault Ste. Marie.

Dr. Reid adds that the disease is concentrated more in some sections. It is particularly prevalent in the Toronto and Southwestern Ontario areas, where "maybe 40 per cent of the elms have disappeared."

To W. M. (Bill) Grundy, Ontario Hydro's Chief Forester, Dutch Elm Disease has become a real problem, because it is killing thousands of trees along power lines, and each one represents a potential power outage.

"It's terriffic in the Toronto area, where we'll probably have to take down 10,000 elms in the next five years," he says. "And it is bad in Western and West Central Regions."

The rapid increase in the spread of the disease is probably related to the sleet storms of 1960.

"The sleet storm didn't help a bit," says Mr. Grundy. "They shattered elm trees badly—thus reducing their vitality and making them more susceptible to the beetles that carry the fungus."

In the past it has been a hazardous job for foresters to bring diseased trees down because, after it sets in, the tree's limbs become extremely weak and brittle.

This problem was largely overcome last September with the pur-

# at large in the land







GOING, GOING, GONE—Hundreds of thousands of elm trees in Ontario are potential targets for the disease-carrying bark beetles. They show a tendency to attack full-grown elms, and the disease moves quickly from tree to tree. Once the fungus penetrates, it rapidly clots the life-giving sap and kills the tree from the top down. As yet, research has been unable to devise a cure for the disease.

chase of an Atlas crane that can put a man 100 feet into the air.

The Atlas operation is somewhat slower than the standard method, which involves climbing, and one of the main objects in buying it was the safety factor.

"Doing the job of removing 10,000 dead elms in Central Region by contract could amount to $1,000,000," Mr. Grundy said. "Using the Atlas, our crews will be able to remove these trees for approximately $400,000."

For the men in the field, the Atlas is Hydro's ace-in-the-hole.

"Without it, there's a lot of trees we wouldn't dare touch at all," says A. F. (Red) Potter, Central Region's forestry superintendent.

"We've found that the Dutch elm disease is a very serious matter from the safety angle. It's dangerous when a man climbs a tree to cut off limbs as much as 22 inches thick—which can break off at a touch.

"But, with the crane, there's no danger of a man coming down with the tree."

And the danger is real.

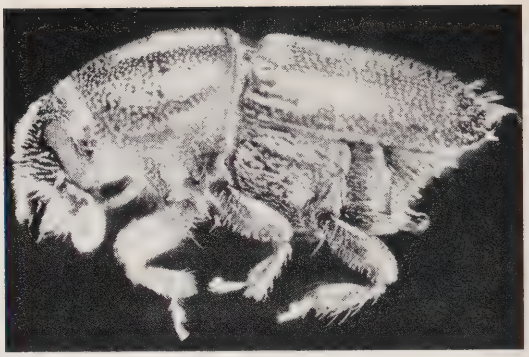
"Ordinarily, elm trees are strong, but when the disease rots them they are worse than any others to work on."

Mr. Potter recalls one time when a man took down a big limb. "The jolt as it crashed jarred two large limbs on the other side of the tree to the ground. It was only luck there was no serious injury."

Another problem for the foresters is that the elm doesn't die all at once—it peels away limb by limb.

"With other trees, we can wait until they are completely dead and —if the line isn't vital—we can fell the tree and set the line up again," Mr. Potter said. "But diseased elms die from the top, and the limbs fall down one by one, which means that, if we left it to itself, we might get a dozen or

# DON'T BLAME THE DUTCH



CREEPING FUNGUS is carried by the elm bark beetle. The spore lies on its body and is introduced into trees when the beetle penetrates the bark to feed or breed.

IT would be fair to say that Canada owes a great deal to the Dutch—but hardly cricket to blame them for Dutch elm disease.

Foresters believe the disease entered Europe from Asia about 40 years ago, and it only got the tag "Dutch" because so much research was done in Holland after its discovery.

The fungus, a whitish spore which rapidly clogs up the plumbing of the mighty elm, is carried by a sharp-snouted beetle which bores into the bark.

It was believed introduced into the United States with a shipment of elm logs, designed for the veneer industry, in 1928. First discovered in Canada at St. Ours, Quebec, in 1944, it spread rapidly through the St. Lawrence and Ottawa River valleys. A second wave moved through the Windsor district in 1950.

The bark beetles—there are two varieties, the European and the less-aggressive native—carry the disease by flitting from tree to tree. They also use modern methods of transportation. When the first outbreak occurred in the U.S., in Ohio, its advance was traced along railroad tracks leading from sea-going ports.

Foresters contend they will also hop on long-distance highway transports and drop off at elm trees along the route.

The disease seems mainly to hit huge trees—between three and five feet in diameter—which have reached maturity and are deteriorating.

"The beetles seem to be a lot smarter than people," reports Al Potter, Ontario Hydro's forestry superintendent of Central Region. "You'll get a row of 10 elms and only seven of them might be affected, which after investigation we'll find are not too healthy.

"Apparently the beetles are able to determine which trees are on the decline very quickly, while we have to go through extensive laboratory tests." ■



SPRAYING with DDT kills the beetles, and is a first-line defence against the scourge. But spraying must be carried out before the disease hits a tree if it's to be effective.

more power interruptions on the line—a waste in time, energy and money."

Each diseased tree must be inspected carefully before a forester goes up. Certain limbs have to be treated with the greatest respect, and, in extreme cases, have to be secured by ropes so they won't be knocked off by the jar as others are pulled down.

The Atlas crane—at the moment Hydro has only the one, working in hard-hit Central Region—came into operation last September, and it could "quite easily have saved a few lives," said Mr. Potter.

With it limbs can be brought down weighing up to 1,500 pounds. The Atlas uses a crew of three, with two groundmen recruited from the area, compared with the standard seven-man forestry crew.

There's no known cure for the disease. Several have been patented which have worked well under experimental conditions, but they were failures in the field.

The only way to prevent the disease spreading is to keep the tree as healthy as possible, using DDT spray to kill the disease-carrying beetles, and by burning diseased trees once they are felled.

But while Dutch Elm Disease is a fatal scourge, killing tens of thousands of stately elms across Ontario each year, hastening soil erosion—and costing utilities money—foresters are not forecasting the extinction of the lofty shade tree.

The concensus is that, with increased knowledge and preventive measures, Dutch Elm Disease will be controlled. Elms are here to stay. ■




THIS PANEL discussed prospects in Canada for nuclear power at the association's first annual meeting. Henri Teekman of Planning represented Ontario Hydro.

## Canadian Nuclear Association takes

# A CLOSE LOOK AT THE ATOM

"FORWARD with the atom." With these words, President I. F. McRae opened the first annual meeting of the newly-formed Canadian Nuclear Association, held recently in Toronto.

The aim of the Association, Mr. McRae declared, was to "promote and foster an environment favourable to the healthy growth of the uses of nuclear energy and radioisotopes. The new association," he said, "will encourage co-operation between various industries, utilities, educational institutions, government departments and agencies, and other authoritative bodies which have a common interest in the development of economic nuclear power."

During the two-day conference delegates from major industries and leading organizations across Canada, including Ontario Hydro, discussed nuclear power development from the "Export Future for Radioisotopes" to the "Siting of Nuclear Reactors." The Hon. Robert W. Macaulay, vice-president of C.N.A., told the Association that reserves of energy resources were no longer as limitless in relation to the tremendous increase in consumption as they once were.

"It is inevitable that there will be an increasing U.S. demand for Canadian energy resources," he said. "This increase in demand will affect price and quantity, and will tend to make nuclear power more attractive." Mr. Macaulay added prophetically, "I cannot repeat too often that the advent of commercial nuclear power is a certainty."

Henri Teekman of the Planning Division, represented Ontario Hydro on a panel discussion of long-term electrical energy requirements in Canada and the prospects for nuclear power. Panelists also included representatives of the Manitoba Hydro-Electric Board, the Quebec Hydro-Electric Commission, the New Brunswick Electric Power Commission, and the British Columbia Electric Company Limited. The panel moderator was Stuart B. Clarkson, Deputy Minister of Energy Resources for Ontario.

Mr. Teekman noted the enormous increase in Ontario Hydro's primary energy demands since 1923. "The increase over the 37 years from 1923 to 1960," he stated, "was equal to that which would have existed if each year there had been a 6.85 per cent increase over the energy demand of the previous year.

"Our forecast," he said, "is for annual energy demands to reach 110 billion kilowatt-hours by 1980, about 3.3 times the 1960 demand."

How are these loads to be supplied? Mr. Teekman pointed out that major resources of Hydro-electric energy had been fully developed and, as a consequence, much of the future growth in energy was expected to be supplied from coal-fired or nuclear plants. He cited last year's operation, when hydraulic plants had provided about 99 per cent of Ontario Hydro's energy requirements, and he predicted that by 1980 they would probably provide only 36 per cent of the necessary energy.

"If the economics of nuclear units develop as hoped," Mr. Teekman told the panel, "we might obtain 36 per cent of our energy requirements from hydraulic plants, about 48 per cent from nuclear plants, and about 16 per cent from fossil-fired plants." ■



# A PROUD RECORD

*Half a century has gone by since the original commissioners took over the duties and responsibilities of the Toronto Hydro - Electric System.*

Toronto "the good" may have lost some of its virtue over the last half century, but there is no denying the excellent reputation for service and achievements established by those who have been responsible for supplying its vast electrical requirements during the last 50 years.

This was made clear in a number of detailed accounts of hydro history which recently appeared in the Toronto daily newspapers in conjunction with the 50th anniversary of the appointment of the Toronto Electric Commissioners. Progress stared from every page, and each old picture helped bring home the fantastic contrast between the past and present.

Speaking at a commemorative banquet, June 1, before some 500 representatives of church, government, hydro and industry, Toronto Hydro Chairman Bertram Merson payed tribute to the first and succeeding commissioners while he described the task involved in keeping pace with the electrical needs of the great metropolis. "It was exactly fifty years ago today," he said, "that the original commissioners, Mr. P. W. Ellis, Sir Henry Drayton and Mayor G. R. Geary, took over their duties and became responsible for conducting the affairs of the Toronto Hydro-Electric System."

Prior to June 1, 1911, hydro had been operated as part of the City's Engineering Department under Mr. K. L. Aitken.

Niagara power arrived with considerable fanfare, May 2, 1911. On that occasion, guests at an official banquet marched from the King Edward Hotel to the steps of the City Hall between lines of white-

FT: Pipe Major Archie Dewar and Ross Stewart ad guests to head table at Toronto Hydro 50th nniversary banquet. BELOW: event is proclaimed this 40-foot symbol at utility headquarters.




RONTO HYDRO commissioners and manage- it personnel at the conference table. From left William Wylie, ass't gen. mgr., Consumer Ser- ; Bruce Prentice, ass't to gen. mgr., Eng.; Harry de, gen. mgr. and chief eng.; John McMechan, -chairman; Bertram Merson, chairman; Mayor han Phillips, commissioner; MacDonald White, gen. mgr.; Jack Ramsay, ass't to gen. mgr., nin. and sec.; H. J. Chambers, ass't chief eng.

coated street cleaners who lighted the way with torches. A replica of Niagara Falls, placed over the City Hall entrance, added realism to the ceremonies, but, unfortunately, the flow was too vigorous, and Prime Minister Sir James Whitney and Sir Adam Beck were among the dignitaries who received an embarrassing shower.

Touching on the origin of hydro in Ontario, Mr. Merson said that the greatest agitation and pressure for a publicly-owned system had come from a most unlikely quarter. "Instead of being fostered by what, in these days, would be considered socialistic thinkers," he said, "the sponsors came from Boards of Trades, Chambers of Commerce and manufacturers."

In describing the dynamic growth of Toronto Hydro, Chairman Merson pointed out that at the end of the first year of operation there were 14,000 meters connected—as compared with over 200,000 at the present time. The kilowatt peak reached 12,830 during the first year, and in 1960 it was 615,000. In the same period revenue grew from slightly less than $\$^3/_4$ million, to over $37 million. Conversely, Mr. Merson noted, the average revenue per kilowatt-hour was two cents in 1912, while last year it was slightly over one cent. "I cannot think of any other daily commodity selling today for 50 per cent less than it did fifty years ago," he said.

The speaker also referred to assets as an indication of progress. He said they had grown from $3 million in 1911 to over $80 million in 1960, plus an equity of $78 million in Ontario Hydro's sinking fund. "The accumulation of these huge assets, which in effect belong to the taxpayers of Toronto, has all been done by hydro funds without one cent of cost to the taxpayers." He estimated debenture debt at only about $13 million.

Street lighting and underground distribution were other outstanding developments described by Mr. Merson. He said that the demand for adequate street lighting was one of the factors which influenced the decision by City Council to set up a municipally-owned electric distribution system. From the outset, 100-watt lamps had been installed all along residential streets, with larger units on commercial arteries.

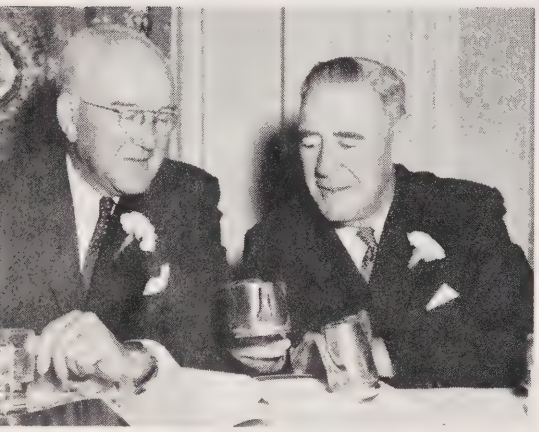
In 1946, he recalled, the Toronto Commission had received permission to spend almost $2 million for the improvement of the city's street lighting. "Today's street lighting in Toronto meets the standards set by the internationally known Illuminating Engineering Society," the speaker continued, "and taking into consideration the illumination of our residential streets, there is no city better lighted than Toronto."

Describing the trend toward enclosing substations in buildings de



signed to blend with the architecture of the neighbourhood, he said that one station on Yonge Street is often taken for a library, and that one of the many bungalow-type stations had been burglarized on two occasions. The system now includes 80 substations.

Mr. Merson said that the early commissioners had laid down a policy of underground installations in the downtown area, and that this had been continued in spite of delays imposed by two wars, a long period of depression, and the 25- to 60-cycle change-over. "Today," he said, "there are many more miles of underground plant than most people in Toronto realize." He cited Yonge Street, Regent Park, Thorncliffe Park and "many other portions of our streets where widenings and removal of street cars have made it possible for us to go underground, and also to remove thousands of heavy cedar poles and replace them by concrete ones."



ONTARIO HYDRO Chairman W. Ross Strike, Q.C., left, discusses banquet program with Bertram Merson, chairman of Toronto Hydro.



TWO VETERANS confer. With 51 years' service, Norman Fisher (standing) holds Toronto Hydro record. MacDonald White is very close to the half century mark.

Quoted earlier in a special section of the Globe and Mail devoted to the story of Toronto Hydro, Mr. Merson said: "In the past 11 years we have spent more than $25 million on underground work, much of which has avoided additional overhead lines entirely." He said that every opportunity would be grasped to go underground in the future so long as it could be financed without upsetting the rate structure. There are now more than 1,250 miles of underground line in the Toronto Hydro network.

The history of public power in Ontario is closely interwoven with that of the province's largest municipality, and it was this relationship that W. Ross Strike chose to expound as guest speaker at the 50th anniversary banquet. It was his inaugural address as Chairman of Ontario Hydro, and he received a standing ovation.

Describing the leading role Toronto played in the fight for public ownership of provincial power resources, Mr. Strike said that while Daniel Detweiler and E. B. Snider were generally credited with initiating the Hydro movement in Ontario, "it is very doubtful that their campaign would have achieved the desired results as early as 1906 without the active participation and co-operation of the Toronto City Council, the Toronto Board of Trade, the Toronto Branch of the Canadian Manufacturers' Association, and such men as P. W. Ellis, Alderman F. S. Spence, W. K. McNaught, and several other Toronto businessmen." He suggested that Mr. Spence had played no small part in convincing Sir Adam Beck of the feasibility of the proposal.

Rebuffed three times in petitions to have the Ontario Government establish a municipally owned public utility to supply Toronto's electrical requirements, City Council remained undismayed. They had an idea that became a vision and was not to be denied, Mr. Strike said, and a coalition of the Toronto forces and the Grand Valley area municipalities eventually brought success.

"On April 11, 1906," Chairman Strike related, "a delegation of some 1,500 representatives of Ontario municipalities marched in procession from the Toronto City Hall to the Ontario Legislature building at Queen's Park, where they presented a resolution asking the Province to appoint a permanent Commission." The members of the first Hydro-Electric Power Commisison of Ontario were named less than two months later.

Stressing the need for co-operation among the Hydro family of municipalities, Mr. Strike said: "Co-operation is the fundamental basis upon which we have built this organization. Never lose sight of the fact that the people of this province must be supplied efficiently, economically and courteously with the best electric service that can be provided." In conclusion, he asked the assembly to rise and acclaim the Toronto Hydro Commissioners and staff "for an unrivalled record of achievement."

Mr. Strike was introduced by John McMechan, Toronto Hydro vice-chairman, as "the man who heads one of the largest business enterprises in Ontario," and "one who can greet by name the people who stand for hydro in municipalities from one end of the province to the other."

Guests who offered their congratulations included: Reeve L. M. Dickinson, Leaside; Controller W. R. Allen, Toronto; Hon. A. Grossman; and former Mayor B. S. Wemp, Toronto. ■

PART II

# THE STORY OF POWER



ACROSS PRAIRIE, hill and forest the natural gas system of Trans-Canada Pipe Lines spans the gap between wellhead and market.

by GORDON MURPHY

THE WORLD is driven by energy. By harnessing its sources, man has lifted himself from the level of the cave to the point where he has commenced the exploration of the universe. Energy has many sources, and not the least of these are the combustibles, or fossil fuels. Coal and the part it has played in the shaping of modern civilization was examined in the first of this series. We turn now to petroleum and natural gas, two other fossil fuels which are becoming increasingly competitive with coal in the bid to supply the world's energy requirements.

The decline of coal as the world's predominant source of energy has been hastened, in recent years, by the development of new-found deposits of petroleum and natural gas, and the construction of pipelines to bridge the gap between the sources of supply and major markets. This is well illustrated in Canada, where, in 1939, coal supplied 63.4 per cent of the country's energy needs, and now accounts for less than 19 per cent of the total. Oil's share of the market jumped in the same period from less than 24 per cent to 57.2 per cent.

The swing from coal to gas and oil, perhaps most apparent in the railroad and home heating markets,

## Oil and Gas

is also well defined in the fuel consumption pattern of Canada's thermal-electric plants. These were formerly operated almost entirely by coal. In 1958, coal accounted for only 52 per cent of the electricity generated by utility central stations, while oil fueled 12 per cent and natural gas 36 per cent—the latter chiefly in Western Canada.

Oil Springs (then known as Black Creek) in southwestern Ontario is thought to be the birthplace of the oil industry in North America, although U.S. authorities will argue the point. A well was brought into production at Oil Springs in 1858, just before oil was discovered in the United States, at Titusville, Pennsylvania. The continent's first gusher blew in unexpectedly in the same area three years later, literally drenching the surprised drillers and the surrounding countryside.

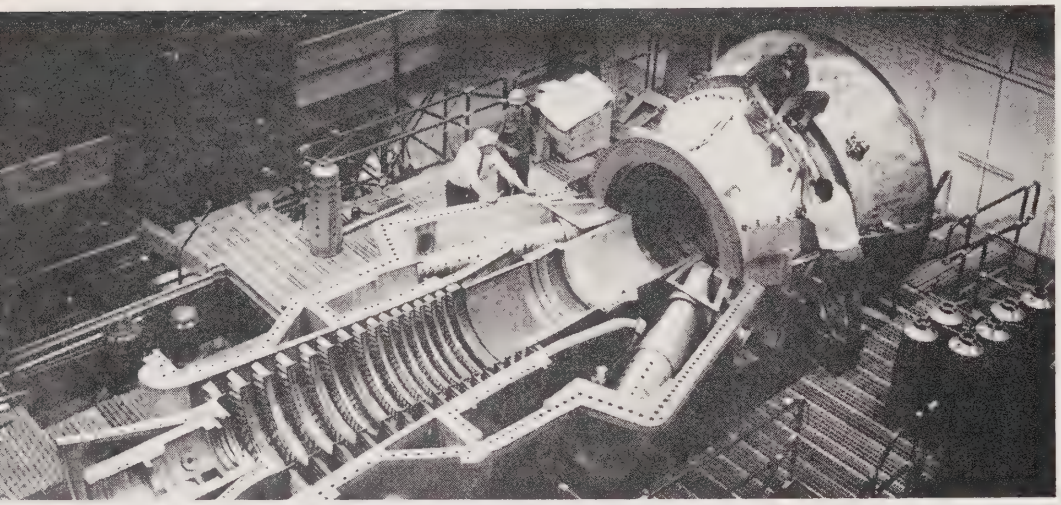
The presence of oil in western Canada was known as far back as 1778, when an explorer reported seeing oil seepages from sands along the Athabasca River north of Edmonton. This report was confirmed five years later by Sir Alexander Mackenzie, and in recent years much time and money have been spent in relatively fruitless attempts to extract oil from the sands commercially. These sands are thought to represent the world's largest reserve of crude oil, and estimates



of their content range from 100 to 300 billion barrels.

The first major oil development in Alberta was at Turner Valley where, in May, 1914, a well blew in after more than a year of drilling. This was Canada's principal oil field for more than 30 years, until it was surpassed by the Leduc discovery.

The strike at Turner Valley was followed by a boom. Brokerage houses sprang up throughout Calgary, and hundreds of oil companies were formed overnight. The Calgary Stock Exchange, previously



TOP: the "father" of North America's oil industry, James Miller Williams was producing crude oil commercially from a well at Oil Springs, Ontario, as early as 1858 and perhaps before.

CENTRE: thermal-electric plants in Western Canada burn natural gas extensively. This 30,000 kw. gas turbine being manufactured by Canadian Westinghouse is for use in Alberta.

BOTTOM: this Imperial Oil drilling rig is exploring for oil on Canadian prairie. Company's Leduc discovery put Canada on the map as an oil producer but markets remain a problem.



established in the corner of a local butcher shop, found business so brisk the day after the strike that clerks abandoned their cash drawers and piled the money into waste baskets. Handsomely engraved stocks sold by the thousands.

The bubble burst three months after the strike with the realization that the production of the Turner Valley field was too small to justify the vast amount of fancy certificates on the market. The outbreak of World War I helped to dampen much of the remaining enthusiasm for further adventures in the oil fields.

Exploration and development of Canada's oil and natural gas potential was all but negligible in the period embracing the two World Wars and up until the Leduc bonanza. The country was almost entirely dependent on imports for its petroleum needs, and coal and manufactured gas provided for most of the energy requirements, apart from that supplied by hydro-electric plants.

The Leduc discovery changed the picture radically. In 1957, ten years after the big strike, Canadian production reached 182,000,000 barrels a year; and in the last five years of that period the annual production of coal declined by more than 4,400,000 tons.

As with coal, Canada's major oil fields are located far from the largest markets. They are in the west, principally in Alberta, which in 1959 produced about

70 per cent of the country's total. Major developments in Saskatchewan and Manitoba, which rank second and third, account for most of the remainder.

The problem of getting this rich Western harvest to distant markets was answered by the building of two major pipelines—the Inter-Provincial, running from Edmonton to Duluth and extending on to Sarnia and Port Credit, a total length of 1,900 miles; and the Trans-Mountain, extending from Edmonton to Vancouver, a distance of 718 miles. Completion of these great pipelines contributed notably to Canada becoming largely self-sufficient in the petroleum field, and helped bring the country to the point where it now ranks second among the nations of the world in the per capita consumption of oil.

The intensified search undertaken throughout the world after the end of World War II resulted in a considerable shift in the balance of world production. More than twice as many wells were drilled in 1956 as in 1946, and during that period the world's recoverable reserves rose from a little more than 60 billion barrels to 200 billion barrels, with about two-thirds located in the Middle East, less than one-sixth in the United States, and about one-fifth in the rest of the world. Canada produces about two per cent of the world total, and holds two per cent of known reserves—exclusive of the tar sands.

This country is at present the seventh largest oil producer in the world, and production will go up considerably in 1961 if the output is to reach the 640,000 barrels per day average for the year which has been announced as a target by the National Energy Board. This amounts to 233,600,000 barrels for the year.

Canada's proven reserves were at an all-time high at the latest count—3.7 billion barrels of crude oil, 538 million barrels of natural gas liquids, and a record 30.6 trillion cubic feet of natural gas. On the basis that the burning of one cubic foot of natural gas produces 1,000 BTU, the figure related to the country's known reserves of natural gas emerges as a very considerable statistic.

And this appears to be only the beginning. It is estimated that 300 trillion cubic feet, worth billions of dollars, will have been proved by 1989—quite a promising outlook for a source of energy which for many years was looked upon as a nuisance. When first discovered in Alberta in 1883, by a railroad crew drilling for water, the gas was greeted with disgust. The fact that it caught fire and burned the drilling rig may have had something to do with its cool reception.

In Eastern Canada, natural gas was first discovered at Dunnville, Ontario, in 1888, and while limited in volume, it was put to good use on a local basis. In contrast, the huge deposits unearthed in Alberta during the next half century in conjunction with the search for oil went largely to waste. Wells were drilled as early as 1904 to serve Medicine Hat with fuel for heating and industrial purposes, but gas lights installed on the city streets were left burning day and night, as this was less expensive than hiring someone to turn them off.

In Alberta it was a case of too much natural gas too soon. Gas liberated in the search for oil was flared off and burned. During the 1920's and 1930's, these giant gas torches in the Turner Valley could be seen in Calgary, 30 miles away. Hunting rabbits at night by the light of the flares was a favourite sport; flowers bloomed all year round, and during the "hungry thirties" the unemployed huddled around the fires for warmth. Conservation authorities eventually ended this practice, but not before the area won for itself the name "Hell's Half Acre."

Natural gas provided a mere two per cent of Canada's fuel requirements in 1926—just one-eighth of that provided by wood and 34 times less than that of coal. Natural gas was still the last name on the energy-providing list in 1949, even though geologists at that time estimated Alberta's proved reserves at more than four trillion cubic feet.

As with oil, development of Canada's natural gas resources has been retarded from the beginning by inadequate markets. This was largely overcome in the late 1950's with the completion of two major transmission lines connecting the gas sources in the West to markets from the Pacific to as far east as the Province of Quebec and south into the United States. The Trans-Canada pipeline runs from Alberta to Montreal, a distance of about 2,250 miles, and has a 51-mile branch running from Winnipeg to Emerson, Manitoba, on the international boundary, through which Alberta gas flows into the United States. The second major pipeline, the West Coast Transmission line, extends from Dawson Creek, B.C., to the United States border south of Vancouver.

Consumption of Canadian natural gas increased tremendously after the pipelines went into operation, an increase which is reflected by the sales of Trans-Canada Pipelines. In 1958, the year the pipeline began deliveries, sales totalled 23.6 billion cubic feet. At the end of 1960, the figure had jumped to 127.5 billion cubic feet. The fuel that nobody wanted is now proving its worth; so much so that economists predict that by 1980 natural gas and petroleum will supply about 70% of Canada's energy requirements.

Canada's resources in oil, gas and coal help to put this country into an enviable position in a world in which possession of energy sources is a prime necessity for progress and industrial greatness. Add to these such primary energy sources as falling water, tides, and the energy to be derived from the atom—sources to be touched on in the final article of this series—and Canada would appear well prepared to meet the energy requirements of the foreseeable future. ■




ONTARIO HYDRO Commissioner D. P. Cliff officially opens the new building. From the left, platform guests are W. J. Weis, Elora Hydro commissioner; Rev. T. J. Rees; J. R. McCullough, manager, West Central Region; Elora Hydro Chairman George Shepherd; and Tom Moffat, District 6 O.M.E.A. president.

# BIG DAY IN ELORA

*New hydro headquarters are in sharp contrast to century-old building formerly occupied.*

CITIZENS of the peaceful and picturesque Grand Valley village of Elora are glowing with civic pride these days.

Object of their affection is the new and attractive headquarters of the Elora Hydro-Electric Commission.

Erected by Elora Hydro, the modern, one-storey structure also contains the municipal offices. It is located directly behind the ancient village hall, said to be as old as the community itself, which served the Hydro Commission for 46 years.

Well over 100 years old, the venerable hall will be demolished to make way for a large civic square and parking area.

Ontario Hydro Commissioner D. P. Cliff, who cut the ribbon to officially open the new building recently, said its construction was indicative of the "vision and forward thinking" of the commissioners and the "steady growth" of Elora over the years.

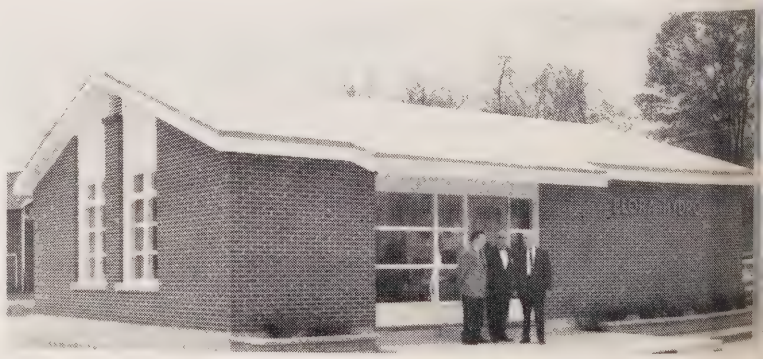
"If service to your customers and taxpayers is your ever-present policy," he told Reeve A. R. Hoffer and Elora Hydro Chairman George Shepherd, "then progress will be your inevitable achievement."

About 50 people gathered to witness the opening ceremonies, which followed a reception and luncheon.

Mr. Cliff observed that the best "yardstick" to measure the growth and development of the village was electrical consumption. Since 1914, when Elora became a Hydro

OVER A CENTURY old, the Elora village hall is being demolished to make way for a civic square. It was hydro headquarters for 46 years.





IN STRIKING CONTRAST to the old town hall, the new Elora Hydro building is as modern as tomorrow. Posing proudly before it are Frank Moynihan, left, assistant secretary-treasurer; Reeve A. R. Hoffer, a commissioner; and E. K. Wilson, secretary-treasurer.

rost-contract municipality, the peak load has grown from 48 kilowatts to 880, and the number of customers increased from 150 in 1915 to approximately 530 last year, he said.

At the same time, he noted, the rost of power has been progressively reduced from 7.46 cents a kilowatt-hour in 1915 to about 1½ ents in 1960. In the pre-Hydro lays, the rate was 10 cents a kilowatt-hour.

Chairman Shepherd thanked the peaker and expressed confidence hat the new building would proide "increased efficiency and etter service to all for many years o come."

J. R. McCullough, manager of Ontario Hydro's West Central Region, presented the commission vith a large, framed color picture f Wasdell Falls G.S., the first genrating plant built by Ontario Hydro.

T. J. Moffat, president of Disrict 6, O.M.E.A., and Harry Wor-n, M.L.A. for Wellington South, lso extended congratulations.

Constructed of red brick, the ew building is electrically heated ith baseboard units controlled by ndividual room thermostats. It ntains a spacious general office ea, vault, board room and washom facilities.

The electrical history of Elora tes back beyond 1914, when Niara power was first made available Ontario Hydro. The village as supplied earlier from Fergus a small generating plant owned the late Dr. A. Groves.

The Elora commission was med January 21, 1914, with hn McGowan as chairman and illiam Snyder and Reeve Thomas Lipsey, commissioners. A new b-station was built, and lines and eet lights installed for the arrival Niagara power nine months er.

At the present time, the Elora nmission is composed of Mr. epherd, chairman, and Reeve ffer and W. J. Weis, commisners. ■

# A "GRAND" CANYON

A CENTURIES-OLD Indian sanctuary and refuge, Elora Gorge is on its way to becoming one of the top tourist attractions of Southern Ontario.

Taken under the wing of the Grand Valley Conservation Authority several years ago, it has been developed into a 400-acre parkland of unsurpassed scenic grandeur, with ample camping and picnic areas, as well as scenic walks and lookouts.

In the very centre of the village, the rushing waters of the Grand River plunge 50 feet over falls into the gorge, formed by towering limestone cliffs rising to a height of 90 feet above the water. For 2½ miles the river runs through this canyon, carved out by nature over the centuries, on its way to Lake Erie at Port Maitland, about 100 miles to the south.

Early in the 17th century, the Grand River region was the home of the peaceful Neutral Indians. In 1650, the warring Iroquois, having destroyed the Huron nation, turned on the Neutrals, who made one of their last stands in the vicinity of Elora Gorge. A large quantity of wampum found in one of the numerous caves that honeycomb the gorge is believed to have been hidden there by the fleeing tribe.

With such an historic background, it is only natural that the gorge abounds with romantic spots, such as Lover's Leap, where an Indian maiden is said to have jumped to her death at the junction of the Grand and Irvine rivers just below the falls; Kee-Chim-A-Tik's cave; Demon's Retreat and the Punch Bowl.

The village itself was founded in 1832 by Captain William Gilkinson, cousin of John Galt, founder of Guelph. A Great Lakes sailor, he purchased 14,000 acres at the falls, and gave the village its name—after his brother's ship, which was named after the famous Temple Caves near Bombay, India.



IN THE HEART of the village, the Grand River plunges 50 feet over these falls into scenic Elora Gorge. Old seven-storey grist mill, left, built in 1858, still operates.

Elora was incorporated in 1858. A seven-storey grist mill built that year by Scottish stonemasons is still operating beside the falls. Population of Elora is now 1,500.

The village's weekly newspaper, The Elora Express, began publishing in 1852 under the name of The Elora Backwoodsman. Its present publisher, Mrs. Katherine Marston, was one of the leaders in the crusade to have the gorge preserved as a parkland area.

Romance and history are interwoven in the churchyard of tiny St. John's Anglican Church, where the lover of Florence Nightingale lies buried. John Smithurst, cousin of the Crimean War heroine, was the first rector of the church. Florence was forbidden to marry him, and he came to Canada to forget. ■



Not a scene from a midway, this is just part of the recent A.M.E.U. vehicle and equipment display, held this year in Scarborough. It was no place for landlubbers as giant aerial lifts tossed willing visitors high up in the blue.

# MECHANICAL SHOWCAS

*The A.M.E.U. holds its fi*

*province-wide vehicle and equipment disp*



Herman Walter demonstrates wood bit hand drill operating from a mobile generating installation. Battery charging circuits in windings eliminate need to keep truck motor running.



This interested group gathered to watch a post-hole digger in action. Ditchers, trenchers, backhoes and tampers all had their turn at the much disturbed earth.

FOR one day last month the spacious grounds of the Scarborough Township Public Utilities Commission service centre looked for all the world like a grown-up version of a toy department.

It was like a small boy's dream on the night before Christmas, as gleaming new trucks, trenching machines, post-hole diggers, chippers and giant aerial lifts were put through their paces.

But it was all business, as more than 200 municipal utility representatives from across the province gathered to assess the virtues of some $2½ million worth of vehicles and allied equipment. Far more than an inert collection of the latest mechanical aids to utility operation, the display took on real meaning as manufacturers, dealers and utilities demonstrated and explained each display.

Prospective buyers were invited to handle the controls, and many were hoisted aloft in the buckets of the towering aerial lifts. Some equipment was being shown for the first time in Canada, and most incorporated recent improvements and modifications.

While smaller equipment displays have been held on a regional basis in the past, this was the first province-wide demonstration, and representatives were on hand from all nine A.M.E.U. districts.

Commenting on the new arrangement, C. V. MacLachlan, manager of the Ingersoll P.U.C. and chairman of the A.M.E.U. Vehicles Committee, said that manufacturers and dealers found the single, centralized show less expensive than moving from location to location, and more were willing to display. He thought that utility personnel would welcome the opportunity to do much of their heavy equipment shopping at one place at a time of year when they are most likely to be in the market.

Future displays will be held as warranted by the development of new equipment and by the interest displayed by the A.M.E.U. membership. They will be centrally located and follow the same general pattern.

Visitors were welcomed to this year's demonstration by Chairman C. H. Carslake and Ron Harrison, manager and secretary-treasurer of the host utility. Reeve A. M. Campbell extended greetings at a luncheon. ■



Scarborough Hydro Chairman C. H. Carslake, left, and Manager Ron Harrison, right, confer with C. V. MacLachlan, Ingersoll, Chairman of A.M.E.U. Vehicles Committee.



Industry representatives hear details of new plan with enthusiasm. From the left are: C. W. Dent, Electrical Contractors' Assoc.; H. Hyde and Bert Merson, Toronto Hydro; Gordon Leyden, Canadian Assoc. Radio and Appliance Dealers; William LeGallais, Canadian Electrical Distributors' Assoc.

# Toronto Hydro introduces finance plan for rewiring

CONVINCED that inadequate wiring is preventing many of its customers from making full use of electrical appliances and equipment, Toronto Hydro has introduced a time payment plan to help finance home wiring improvements.

Under the new plan, customers will be able to pay for approved electrical work on their regular hydro bills over an agreed period. A minimum down payment of 10 per cent will be required, and interest will be charged at 6 per cent.

Customers taking advantage of the plan will be required to establish a firm price for the job with a contractor, who will forward a conditional sales contract to Toronto Hydro for approval. The utility will provide prompt payment, upon receipt of the invoice, together with the Ontario Hydro Inspection Approval Certificate.

The kind of work qualifying under the plan will include increasing the size of service entrance facilities and distribution panels; addition of branch circuits and the installation of three-wire systems to accommodate heavy appliances.

Details of the plan were outlined at a recent meeting between Toronto Hydro officials and contractors, dealers, manufacturers and other representatives of the electrical industry.

In opening the meeting, Chairman Bertram Merson welcomed criticism and called for a frank and open discussion of the plan.

Toronto Hydro manager Harry Hyde told the gathering that the plan was aimed especially at customers in districts where large, private homes had been converted to multiple-occupancy dwellings and existing 30 to 60 amp services were badly overloaded. He thought the plan would also appeal to customers living in well-maintained residential areas where the wiring, installed 20 or 30 years ago, was now inadequate.

New electrical appliances may also be financed under the plan. ■

# HOT WATER — *IN A HURRY*

## Ontario Hydro adds another weapon to its arsenal designed to meet competition in the water-heating field

MUNICIPAL utilities and Ontario Hydro now have the answer for the customer who says: "My electric water heater is big enough for my family most of the time, but once in a while I want extra hot water in a hurry."

The answer is a 40-gallon water tank with a 1,000-watt element at the bottom and a 3,000-watt element at the top. In approximately one hour, these fast-recovery water heaters can provide about 10 gallons of hot water, enough for a bath or another load of laundry.

Extra convenience for the customer is being stressed in the latest phase of the water heater program initiated by Ontario Hydro and the municipal utilities. The program is designed to improve the competitive position in the water heater market, one of the largest producers of gross revenue.

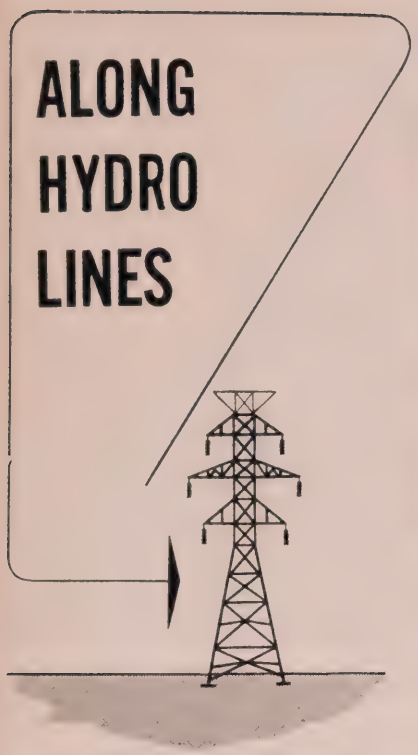
A new flat rate for 1,000/3,000-watt water heaters, based on a load survey conducted in London from February, 1959, to April, 1960, was introduced for rural customers by Ontario Hydro on March 8, 1961. For about 20 cents more a month, the customer can have three times the recovery, and the same storage capacity, as he did with a 1,000/1,000-watt unit.

The 1,000/3,000-watt unit proved in tests that, provided a sufficient number of water heaters of this rating were installed, it would be an acceptable load in most municipalities. Since the load with unbalanced units is more diversified than with balanced units, the effect of the higher wattage fast-recovery water heaters on most system peaks would be quite low.

The survey indicated that the new 1,000/3,000-watt package unit would find a ready market among customers and, at the same time, ensure that utilities which adopt this new standard unit would recover energy costs.

Strongly competitive, the fast recovery water heater is just the kind of load Ontario Hydro Chairman W. Ross Strike has been promoting in his load-building campaign around the O.M.E.A. circuit. ■

# ALONG HYDRO LINES



**Kitchener meter expert retires after 50 years**

Half a century of meter experience was lost to the Kitchener Public Utilities Commission with the recent retirement of J. Gordon Steiss. He is shown, right, receiving congratulations from P.U.C. Chairman Donald Weber at a testimonial dinner marking his retirement.



Mr. Steiss started work with the Kitchener utility in March, 1911, when it was known as the Berlin Light Commission. Meter reading and the trimming of carbon arc street lamps were among his earliest duties.

During his career, Mr. Steiss prepared a widely recognized instruction manual on watt-hour meters, and he has lectured throughout the province on the subject. He was one of the founders of the Grand Valley Metermen's Association, and has been a director since 1948.

**Clinton P.U.C. holds open house**

A recent invitation to view the new office and service centre of the Clinton Public Utilities Commission was received enthusiastically by the townsfolk. Door prizes offered by local electrical appliance dealers were an added attraction.

Built and occupied in 1959, the building received final touches only recently. These include a plaque bearing the names of four Commissioners in office at the time of construction. Still serving, they are: W. E. Perdue, Chairman; Charles Brown, Harold Hartley and Antoine Garon.




## Water Heating Expert

VISITORS to this year's electrical show sponsored by the Niagara Falls and Stamford Township hydro systems were jolted into attention by "Bobby Booster", a robot hot water tank who answered their questions on water heating. Wired for sound, Bobby was just one of the many exhibits in a showcase designed to portray the latest electrical aids to modern living. Door prizes, closed-circuit television, electronic cooking and an electric car were other popular attractions. ■

**CHANGES IN MAILING PROCEDURE**

Hydro News is now being addressed directly to the homes of all municipal hydro commissioners at present on the mailing list. The number of copies mailed to the utility office has been reduced by the number of commissioners so affected.

# press comment

BILLS are never popular, irrespective of value received, and it was refreshing to find this comment in the Winchester Press:

"Don't get the idea we have turned this bit into a municipal Hydro column, but really, when you pay your bill the next time, and you think you are getting robbed, STOP for a minute and figure it out. The average domestic consumer gets billed once every two months or 60 days. If your bill is $20, and many are not that high, the cost per day for all the electrical power you use is only about 33 cents. What else can you buy for that money that is as useful and as important to every day living? And in Winchester, hydro electric consumers pay one of the lowest rates in Eastern Ontario. So, in simple words, quit your crabbing and be thankful we have a well managed hydro system in town."

AN Electrical Digest editorial draws attention to some of the fueling problems associated with thermal-electric plants "and the variance in thinking on this matter in West and East.

"Significant changes in fuels are interesting," the magazine points out, "particularly with the emphasis on operating economy. In the Maritimes oil is becoming more widely used. By contrast, the Wabamun station, already mentioned, 42 miles west of Edmonton, will be switching from natural gas to coal."

BOLD headlines, "EXPOSED WIRE SHOCKS LINEMAN," were followed by this item in the March edition of Mad Magazine:

"Hank Shlubb, right guard for the Winston-Salem Filters pro football team, was shocked today when he walked into his house and discovered an open telegram laying at his feet. The wire announced that Shlubb had been traded to Biloxi."



## Champion Country Correspondent

VOTED CHAMPION country correspondent for 1960 by the Ontario Weekly Newspapers Association, Mrs. Lillian Allison is the latest recipient of the Ontario Hydro award of merit. The plaque was presented by James A. Blay, right, Ontario Hydro's director of information, at the recent convention of the Association at Ottawa. Sharing the winner's pride is H. Keith Graham, publisher of the Chesterville Record, for which the new champion has corresponded for the past 10 years. The wife of a farmer (Frendlee Farm), a former school teacher and active in community organizations, Mrs. Allison writes a column entitled "Frendlee Farm Chats", in adddition to regular news reporting. ■

### THE BATTLE MEMORIAL

*(Continued from page 5)*

historic British regiments which took part in the battle. The commanding officers of Canadian militia units descended from those which fought at Crysler's Farm were also to be present.

Prime Minister Leslie M. Frost of Ontario was to officially open the Village and the parks system, and one highlight of the opening day's ceremonies was to be a meeting of the Ontario Cabinet in Simcoe House, where the first meeting of the Executive Council of Upper Canada was held 169 years ago.

Further highlights of the opening day ceremonies: a display of tactics used during the Battle of Crysler Farm, presented by the famed Old Fort Henry Guard; the opening of the British and Canadian Courts of Honor with presentation of regimental colors. ■

### Transformer Stations with the narrow look

With a view to reducing property costs, Ontario Hydro engineers have produced new designs which will permit the construction of some types of transformer stations within the relatively narrow confines of a transmission line right-of-way. Three such stations are planned for the Metropolitan Toronto area, and consideration is being given to use of the new designs in other locations.

# municipal briefs

**Underground** distribution plans have been making news in a number of Hydro municipalities lately. In Toronto, the City plans to issue $120,000 in debentures to provide capital funds for the Toronto Hydro-Electric System to help defray the cost of removing overhead circuits to underground locations. This is in accordance with a 1949 agreement between the City and Toronto Hydro, and it brings the total funds contributed for this purpose to more than a half a million dollars.

**In Galt,** the Public Utilities Commission agreed to extend a back lot distribution line to some 27 new homes, but, according to the local press, "this might be the end of overhead lines. In future," the report says, "it appears most new lines will be underground." Galt Commissioners have voted to place a $200 charge per lot, for underground distribution facilities, subject to a scaled rebate based on electrical services used by the householder.

**Woodlawn Park** is Brockville's first subdivision with an all-under-

*(Continued on page 24)*

### Thomas E. Howard dies at Chatham

Chatham lost one of its leading citizens with the recent death of Thomas E. Howard, Chairman of the Public Utilities Commission and a retired school teacher. He had been a member of the local Commission for twelve years, and was a former O.M.E.A. director.

Born in England, Mr. Howard taught in several Ontario centres before moving to Chatham 27 years ago. He was shop director and head of the electrical department of the Chatham Vocation School prior to his retirement in 1957.

Among the survivors are his widow, the former Rose Williams; a daughter, Mrs. Richard Outram, Toronto; and a son, Thomas M., of Vancouver.

### First ship docks at Lakeview G.S.

Not in line for the conventional topper which goes to the skipper of the first boat into Toronto Harbour each spring, Captain G. A. Johnston of the Midland Prince still won a hat. It was a construction helmet awarded to him for docking the first ship at Ontario




Hydro's Lakeview Generating Station. The hard hat, adorned with a drawing of the big thermal-electric plant, was presented by G. T. Gambling, project engineer. The captain's cargo was 8,000 tons of coal.



## Honorary A.M.E.U. Membership

ONE OF the true pioneers of the Canadian electrical industry, Rex H. Martindale, Sudbury (centre), received an honorary membership in the Association of Municipal Electrical Utilities (of Ontario) at the Association's annual Past Presidents' Dinner in Toronto recently. Shown with Mr. Martindale, who was manager of Sudbury's electrical system from 1902 to 1953 and president of the A.M.E.U. in 1952, are Morton W. Rogers, manager of Carleton Place P.U.C. (left) and F. G. York, general manager of the Ottawa Hydro Commission and 1961 A.M.E.U. President. Mr. Rogers, a long-time friend and Hydro colleague, made the formal presentation of the framed scroll, which cited Mr. Martindale's pioneering work in the municipal electrical systems of Ontario. ■

ground distribution system. A number of the homes will also be electrically heated.

**Port Arthur P.U.C.** plans to spend $630,000 in 1961 for major extensions and improvements to its buildings and distribution system. Of this, $350,000 will be raised by 20-year debentures. Substation improvements will cost $140,000; buildings, $211,000; distribution system, $200,000, and the purchase of water heaters, $35,000.

**Leamington P.U.C.** is probably the first utility to undertake a lighting survey covering all stores, light industry, offices and churches. Aimed at improving the general standard of lighting in the community, the survey was carried out with the assistance of Ontario Hydro lighting specialists.

**Galt P.U.C.** recently lost the decision in a $36 claims case against a transport company which refused to pay damages after one of its vehicles damaged the arm on a lamp standard. The judgment held that the old standard stood too close to the curb and failed to allow sufficient clearance.

**Windsor Utilities Commission** estimates its 1961 expenditures at $662,350. These will include $281,000 for distribution system; $250,000 for street lightings, $80,400 for sub-station improvements, and $35,450 for utility equipment.

**Chatham P.U.C.** is going ahead with plans to build a new, eleven-bay garage at a cost of about $59,000.

**Owen Sound P.U.C.** expenditures for 1961 have been established at $158,630. A new substation will cost $83,530; water heater purchases, $21,000, and distribution system, $45,100.

**City of Sudbury** will issue $750,000 in 20-year debentures to provide the funds required by Sudbury Hydro to complete the purchase of rural distribution facilities annexed by the City in January, 1960. These, together with debentures approved earlier, will permit the utility to pay the total purchase price of $1,258,575.




## Mimico Students Rewarded

STUDENTS OF MIMICO elementary and secondary schools who were winners at the local level in this year's Ontario Public Speaking Contest were guests of the Mimico P.U.C. on a recent tour of the St. Lawrence area. The eight lucky orators also received silver cups donated by the Mimico utility. The tour included visits to historic Crysler Farm Battlefield Park and Upper Canada Village, as well as the international power development. Students are shown in front row, with P.U.C. Chairman, Amos Waites, Mayor H. M. Griggs and Vice-Chairman James Edmond in the second row. Others in the group include teachers, principals and members of the Lakeshore District Board of Education. ■

---

**Oshawa P.U.C.** recently celebrated the delivery of rental water heater No. 2000 to a new home in the Castle Homes subdivision. The utility began its flat rate water heater rental service, January 1, 1959. The installation of No. 2000 brings the total of flat rate units in Oshawa to more than 12,000.

**Rate adjustments** for 1961 designed to provide more revenue have been announced by the Belleville, Kemptville and Cobden hydro utilities. Deep River and Winchester have revised their rates downward. Galt and Sandwich East have reduced flat rate water heater rates.

**Personalities** recently in the news include **J. Drader Hawken,** former chairman and commissioner of Wallaceburg Hydro. He received a special presentation in honor of his 15 consecutive years of service. The resignation of **C. C. Skinner** from the Schreiber Twp. Hydro Commission was accepted with regret recently. A former reeve and councillor, he served on the original commission in 1949. **J. E. Stockes** was appointed to fill the balance of Mr. Skinner's term.

The appointment of **Roy Lawrence** as manager of the Napanee P.U.C. was recently announced by chairman **H. W. Vine.** He replaces **C. A. Walters,** who is retiring. **Harry Hyde,** Manager and Chief Engineer of Toronto Hydro, has been elected to the Canadian Standards Association Board of Directors for a term of six years. ■

# OFF THE WIRES



This is June, 1961—but there's still one spot in Canada where they are dipping candles, travelling over plank and corduroy roads, and using hand-made nails.

* * *

*Ontario's Upper Canada Village, which was to be officially opened to the public this month, nestles on the shores of Lake St. Lawrence (created by the international St. Lawrence Power Project) just east of Morrisburg.*

* * *

Anyone with a taste for authentic Canadian antiques or an interest in the history of Eastern Ontario, should make this cluster of venerable buildings (some of them more than a century old) a "must" stopping-place.

* * *

*Interested readers can satisfy their curiosity about this new Canadian tourist attraction by reading our story, "A Bridge That Leads to the Past" on page two of this issue. But a word of congratulations to Prime Minister Leslie Frost and George H. Challies, a former vice-chairman of Ontario Hydro and now chairman of the Ontario-St. Lawrence Development Commission, who were responsible for the creation of this intriguing salute to the past.*

* * *

Two well-known municipal Hydro executives, John Torrance, chief engineer of Etobicoke Hydro and Bert Fleming, manager and chief engineer of Toronto Township H.E.C., are now serving on an Ontario committee formed by the Ontario Association of Architects and eight other organizations in the building and planning field. The purpose of the committee is to obtain improvement in community design and encourage greater co-ordination among the different groups which operate in the business of planning and building communities. Incidentally, representatives of Ontario Hydro's Consumer Service Division, including H. J. Edwards, are also serving as advisory members of this important group.

* * *

*A recent revision of boundaries for Ontario Hydro's West Central and Western Regions has brought about some important administrative changes.*

* * *

Already announced is the transfer of three area offices at Stratford, Clinton and Mitchell to the Western Region.

* * *

*Now the latter region is also serving nine additional municipal Hydro systems at: Blyth, Brussels, Clinton, Goderich, Mitchell, St. Marys, Seaforth, Stratford and Tavistock since the change.*

* * *

Deepest sympathy is extended to Mrs. V. S. Wilson, wife of O.M.E.A. President Dr. Wilson, Etobicoke Township, in the death of her father, the late Frank L. Schofield of Wilberforce, Ont., earlier this month.

* * *

*Last month's issue contained the information that some wizard has invented an electric toothbrush. Now we hear that two researchers have developed an electronic cane for the blind. The device, which is being field tested, can be carried like a small brief case. It shoots out pulses of infra-red light. When the beam strikes an object up to 10 feet away, it is reflected back to a photo-electric cell in the cane and triggers a buzzer. The user then can press a button, which cuts the range of the beam to five feet. This gives a rough estimate of the distance from the object.*

* * *

Why are the yellow pages of our telephone directories yellow? We got the answer from a recent issue of *The Bell News*, a monthly employee newspaper published by the Bell Telephone Company.

* * *

*It happened 30 to 40 years ago when both the alpha and classified sections of most directories were still being printed on white and combined under one cover. This was found to be presenting a visual problem in distinguishing the two sections, so some now-forgotten genius suggested printing the classified section on colored stock.*

* * *

Pale yellow was chosen after eye research had revealed that this color combination was second only in legibility to black and white.

* * *

*Some countries still print their classified sections on white, but the classified directories in Paris, France, are printed on pink stock.*

* * *

The Rubber Association of Canada is reported to be the authority for the following hints on how to wear out car tires in a hurry: (1) Always travel at the highest speed; (2) Turn corners as fast as possible; (3) Always use jack-rabbit starts; (4) Make every stop a panic stop—lock the brakes; (5) Ignore recommended tire pressures; (6) Slam over pot-holes, rocks and curbs. Don't miss any; (7) Never rotate the tires; (8) Maintain wheels unbalanced or misaligned; (9) Spin wheels whenever possible on gravel, in mud or snow.

* * *

*Careful attention to these nine points will yield big dividends in shortened tire mileage, increased gas and oil consumption, and rapid deterioration of brakes, front-end, transmission and other parts of the car. Lengthening car and tire life by anywhere from 20 to 50 per cent, thus saving dollars and grief, is, in the opinion of the Canadian Highway Safety Council, no way for motorists to keep the employment picture bright.*

# TOUR FACILITIES

*For your family's enjoyment and information you may visit one or more of these Ontario Hydro installations. During July and August Ontario Hydro offers an extended tour schedule at its major plants.*

**ROBERT H. SAUNDERS - ST. LAWRENCE G.S.**
One-hour tours every day from 8.45 a.m. to 7.30 p.m. Tour includes inspection of Robert H. Saunders - St. Lawrence Generating Station and a film of its construction. Tours start from the Administration Building on western outskirts of Cornwall.
Other attractions in the area . . . Upper Canada Village—a pioneer village developed by the Ontario - St. Lawrence Development Commission is about 25 miles west of Cornwall near Morrisburg.

**SIR ADAM BECK - NIAGARA G.S. NO. 2**
One-hour tours every day from 9 a.m. to 4 p.m. Tour includes inspection of Sir Adam Beck - Niagara G.S. No. 2 and a 27-minute film. Tours start from the Information Centre at the station's headworks.
Other attractions . . . Niagara Parks—one of Canada's major tourist attractions, the parks and Falls provide a breath-taking panorama of beauty and power.

**DES JOACHIMS G.S.**
One-hour tours every day from 1.30 to 4.30 p.m. Tours start at Lookout on Highway 17, north of Pembroke, and include a tour through Des Joachims G.S.
Other attractions . . . Algonquin Park—Ontario's largest natural park has provision for overnight and extended camping. Chalk River—Canada's nuclear research centre is some 20 miles downstream from Des Joachims.

**DOUGLAS POINT N.P.S.**
Every day from 9 a.m. to 6 p.m. Explanation of the work in progress from a strategically placed lookout. Located on the shores of Lake Huron off Highway 21, midway between Port Elgin and Kincardine.
Situated in the heart of an excellent summer resort area with facilities for all types of summer sports.



# TARIO HYDRO NEWS JULY-AUGUST 1961

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oor chefs know South River as the charcoal capital of Canada—see page 10

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# ONTARIO HYDRO NEWS

JULY-AUGUST VOL. 48 NO.'s 7 and 8

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## ABOUT THIS MONTH'S COVER

THERE may be more truth than fiction in the tale told by the talented brush of staff artist John Elphick on this month's cover. And it will take a second look to register all the details. For the story of charcoal and hints on how to avoid similar predicaments, see South River Barbecue commencing on page 10 of this issue.



A JOB WELL DONE seems to interpret the reflections of this construction man as he contemplates Red Rock Falls G.S. in the final stages. Further power from the north is in the making at Otter Rapids and Little Long Rapids.

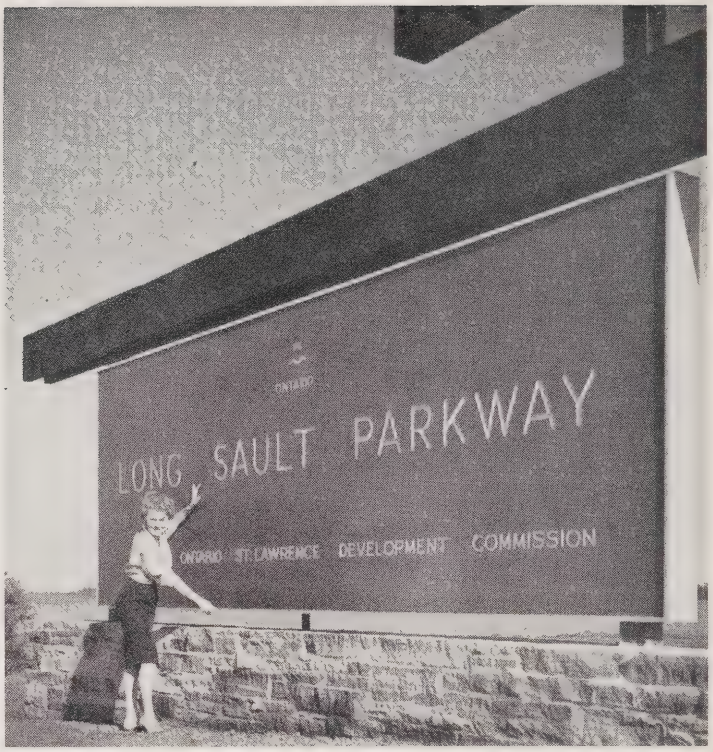
*The Seaway*

*and Power Project came first;*

*now, the St. Lawrence Valley*

*has blossomed*

*as a vacation paradise.*




THE man-made St. Lawrence Seaway and Power Development has brought a new and exciting concept of life to Eastern Ontario.

And although the St. Lawrence is usually thought of in terms of shipping and electric power, it is fast becoming synonymous with outdoor enjoyment.

Along the banks of the St. Lawrence River, paralleling these giant developments, an extensive parks system has been brought into being by the Ontario - St. Lawrence Development Commission.

The Upper Canada Village opening, June 24, marked the culmination of this long, ambitious project to give the people of Eastern Canada and their visitors a vast system of parks and historic sites, where they may find pleasure and reflect on the past.

The St. Lawrence Parks system is now truly a playground, a mecca for tourists which officials feel will rival Niagara Falls, Algonqu Park and any other outd attraction.

Foremost in this playground the authentically-reproduced U per Canada Village (see Onta Hydro News, June, 1961). Bu is only a part of a system extend 169 miles from Adolphustown,



MAJESTIC Canada Geese enjoy themselves in the safety of new provincial wildlife sanctuary located near Morrisburg.

# AWRENCE PLAYGROUND

Lennox and Addington County, to the Quebec Border.

Where the historic Long Sault Rapids once laced the river with white caps, a scenic causeway now conducts motorists for a distance of 6½ miles through 10 of the 18 new islands created when the level of water was raised. This Long Sault Parkway provides visitors with a scenic panorama of that area of the river where the rapids existed.

Crysler Park, a 2,000-acre combined recreational area and historical memorial located near Upper Canada Village a few miles east of Morrisburg, commemorates the victory of British and Canadian troops over American forces in 1813.

Here are to be found historical and folk museums, picnic areas, a working model of an early lock and canal and an 18th century bateau.

Aside from these major sites, the St. Lawrence playground is dotted with picturesque camping grounds, beaches, picnic facilities, and look-out towers. There are complete facilities for tourist enjoyment of



IMPRESSIVE ceremonies marked the opening of Upper Canada Village earlier this summer. Located in 2,000 acre Crysler Farm Battlefield Park, the pioneer village is fast becoming a leading tourist attraction.



COME ON IN — the water is fine at any of the new beaches which have been established along the new shoreline of Lake St. Lawrence. Facilities like this make the parks a holiday paradise.



CAMPERS have not been forgotten in the new park system and this one is relaxing in the Long Sault Parkway area.

VISITORS to the St. Lawrence playground can study birds and animals in their natural environment. Here, Park Attendant Bryce Rupert allows a fascinated young lady to feed one of the fawns in wildlife sanctuary.

## ST. LAWRENCE PLAYGROUND

every kind, including a marina, youth camp sites and a bird sanctuary.

Its geographical position assures an annual invasion of thousands of visitors from Canada, the United States and other lands.

But Ontario - St. Lawrence Development Commission Chairman George H. Challies emphasizes that the new park will primarily benefit the people of the St. Lawrence Valley communities. It will give new impetus to the area's tourist trade and stand as a proud monument to the pioneer forefathers of many of the people who live in the St. Lawrence Valley. ■



THIS SPLENDID ROAD winds from island to island throughout the Long Sault Parkway. The scenic, 1,300 acre park offers bathing, fishing, camping and picnic areas.

# A MAN OF MANY FIRSTS

HON. ROBERT W. MACAULAY, Ontario Hydro's first vice-chairman, can also claim other important "firsts".

For instance, he is the first man to hold the post of Minister of Energy Resources for the Province of Ontario—a new department created by Prime Minister Leslie M. Frost in May, 1959.

In this new capacity, Mr. Macaulay was one of the prime movers of the First Canadian Conference on Uranium and Atomic Energy held in Toronto early in 1960. That historic gathering provided the impetus for the subsequent establishment of the Canadian Nuclear Association—a permanent forum now actively studying the roles open to Canadian industry and other interests in the peaceful uses of atomic energy. Mr. Macaulay is the charter Vice-President of this pioneer organization.

But the biographical file on this 40-year-old member of a prominent Toronto family also contains the interesting fact that he was created a Queen's Counsel in April, 1954, at the age of 33, and thus became one of the youngest men in the British Commonwealth to earn this distinction.

Ontario Hydro's new First Vice-Chairman was born in Toronto on May 25, 1921, and was educated at Upper Canada College and the University of Toronto from which he graduated as a Bachelor of Arts. He attended Osgoode Hall Law School in Toronto, and was called to the Ontario Bar in 1948.

Noted as the co-author of a legal textbook, Mr. Macaulay has been associated with the Toronto law firm of McLaughlin, Macaulay, May and Soward, and lectures at the University of Toronto Law School. Recently he completed publication of a booklet and a series of newspaper articles on energy, and he is presently working on a two-volume biography of the late Sir Oliver Mowat, a former Prime Minister and Lieutenant-Governor of Ontario.



SYMBOLIC of his dual responsibilities, this photograph shows Hon. Robert W. Macaulay framed in the window of his Ontario Hydro office with Queen's Park in the background.

First elected to the Ontario Legislature in 1951 to represent the riding of Riverdale-Toronto, Mr. Macaulay was re-elected in 1955 and 1959. One of the main points of contact with his constituents has been through a weekly legal-aid clinic which Mr. Macaulay established at Toronto's Wood-Green Community Centre in 1951. The youthful cabinet minister reports that more than 12,000 residents of the Toronto - Riverdale riding have come to the clinic since it began 10 years ago.

In the intervening years, too, he has taken an active role in the work of several select committees of the Ontario Legislature, having served as chairman of one committee and as a member of several others. His contribution to the deliberations of these committees and to the debates in the Ontario Legislature were recognized on May 26, 1958, when Mr. Macaulay was appointed Minister without Portfolio and Second Vice-Chairman of Ontario Hydro, becoming the youngest member of Ontario's Executive Council.

Less than two years later—on May 5, 1959, to be precise—he assumed new responsibilities as the Province's first Minister of Energy Resources. At the same time, Mr. Macaulay moved into the very office at Queen's Park where his father, Leopold Macaulay, had established a family tradition of public service as Provincial Secretary and Minister of Highways some 30 years before.

This year another honor has come to this second-generation public servant by his appointment as Hydro's First Vice-Chairman on June 1, succeeding Chairman W. Ross Strike—a new and more responsible post which, according to the words of Prime Minister Frost, will enable Mr. Macaulay to "make an even greater contribution to the Commission." ■

# A Changing Frontier



"MOONLIGHT" now enhances the grounds of Victoria Park 365 days of the year. The new $125,000 landscape lighting project illuminates more than 1,000 trees and includes some 400 units.

WHILE the great cataracts of Niagara thunder on unperturbed, their environment is constantly changing. Projects now underway, or recently completed on both sides of the international border, will facilitate access to the area, permit viewing in a new perspective, and provide veteran visitors with a fresh fillip of interest.

Perhaps the most startling changes are taking place on the American side of the river, where New York is attempting to attain in one great effort what Ontario has built up over half a century.

Just across the gorge from Ontario Hydro's Sir Adam Beck plants, the Power Authority is completing its $720,000,000 hydro-electric plant and pump-storage reservoir. It is also participating in a related program of park development, parkways and a general enhancement of the area.

Inland, the Niagara Expressway is being constructed from Grand Island to Lewiston, connecting there with a new bridge to Queenston, much as Ontario built the Queen Elizabeth Way from Fort Erie to the Rainbow Bridge some 20 years ago.

The new Queenston-Lewiston Bridge, being undertaken by the international Niagara Bridge Commission, is scheduled for completion in 1962. It will link the Queen Elizabeth Way and the new Niagara Expressway. This will enable through traffic to avoid the Rainbow and Whirlpool Rapids bridges.

Dismantling the 62-year-old existing bridge will bring the 113 year era of Niagara River suspension bridges to an end. The new structure, about a half mile upstream from its predecessor, is a steel arch span and almost a replica of the Rainbow Bridge.

A serious bottleneck in the flow of traffic to Niagara Falls from Eastern Ontario was removed with the completion of the Burlington Skyway in 1958, and a project is well advanced which will remove the last major obstruction.

MODERN STRUCTURE in foreground is the 282-foot observation tower at Prospect Point on the American shore. Opened last February, it has been drawing excellent crowds. Rainbow Bridge is just downstream.

ARTIST'S CONCEPTION of the new Queenston-Lewiston Bridge and connecting traffic arteries also indicates proximity of the Ontario and New York power developments. Bridge will be completed next year.



*Niagara district visitors will acclaim these new developments*

Scheduled to open in September, 1963, the towering Homer Skyway at St. Catharines will replace the present lift bridge over the Welland Canal.

Further advances in the effort to provide every conceivable vantage point from which to view the falls and surroundings have been made on both shores. Tourists are already flocking to a 282-foot observation tower at Prospect Point on the flank of the American Falls. It replaces the old elevators, which were condemned after a rock fall in 1954, and provides a view never before attainable.

Not to be outdone, private interests in Ontario are constructing the Seagram Tower. Located at Falls View, near the Horseshoe Falls, this 300-foot tower will rise some 500 feet above the gorge.

To be completed early next year, the Seagram Tower will consist of a seven-storey superstructure on a 190-foot stem. On a clear day the entire length of the Niagara River will be visible from its observation decks, and it will be possible to discern the cities of Buffalo and Toronto. A duty-free shopping centre has been built near the base of the tower, and other developments planned here include a theatre, shops, cafeteria, motel and swimming pool. The duty-free centre is similar to the one now operating at Ivy Lea in the Thousand Islands, and it permits U.S. citizens travelling in Canada to purchase imported goods, within custom limits, free of Canadian and United States tariffs.

Another spectacular addition to the Canadian-Niagara scene is the $125,000 landscape illumination project recently completed by the Niagara Parks Commission at Victoria Park. More than 400 lighting units have been ingeniously installed in trees and shrubbery from Mowatt Gates at the park entrance, to the refectory near the Horseshoe Falls.

The lighting creates illumination similar to that of the moon, although the intensity is two or three times greater. Installation involved more than 20,000 feet of trenches to accommodate some 70,000 feet of underground circuits. The lighting, which represents a total load of 132 kilowatts, will be turned on 365 days of the year.

The City of Niagara Falls, Ontario, is itself scheduled for a metamorphosis if present plans materialize. Proposed annexation, now being considered by the Ontario Municipal Board, would more than double the population and create a super city extending far beyond the present boundaries.

Rich in history and long developed, the Niagara is still very much a changing frontier. ■





CANADIAN TOWER and associated development, including a duty-free shopping centre now operating, are portrayed in this sketch. Known as the Seagram Tower, it will be completed early next year.

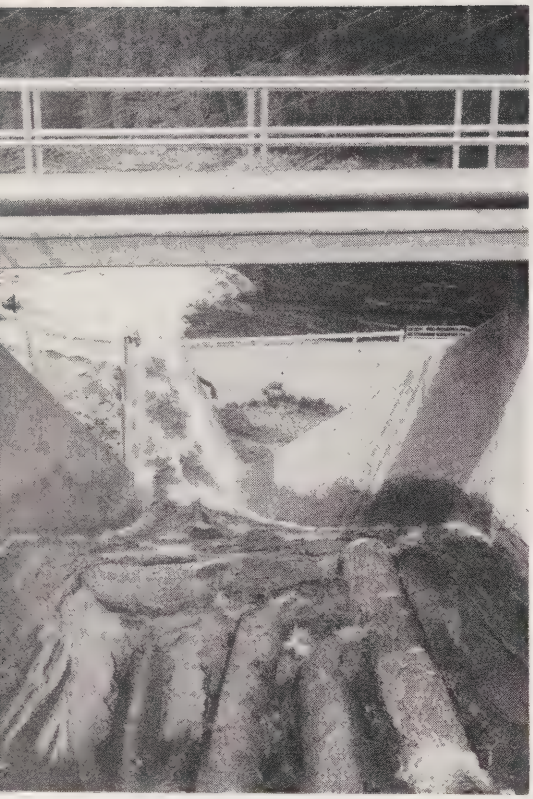
# power from the north

*Red Rock Falls*

*on the Mississagi River*

*contributes*

*40,000 kilowatts*





AGAINST a background of power, Prime Minister Leslie M. Frost and Ontario Hydro Chairman W. Ross Strike discuss the promising future.

THE MISSISSAGI is a lumbering stream and these logs find their way unimpeded as they enter the chute by-passing Red Rock Falls, G.S.

MR. STRIKE opened the ceremonies by saying that Ontario Hydro was turning to the north for almost two million kilowatts.



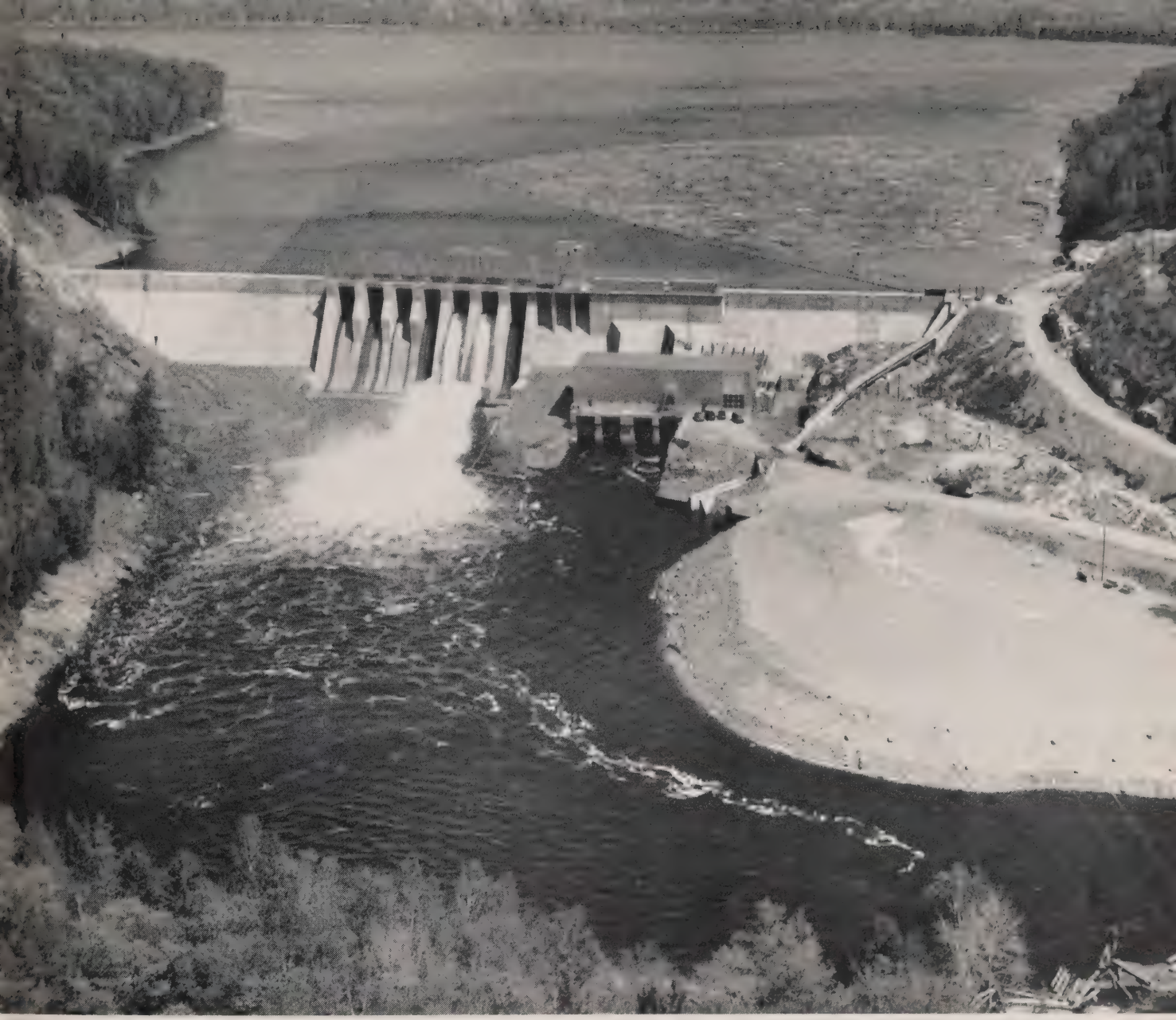

WITH a declaration of faith in Northern Ontario, Prime Minister Leslie M. Frost, accompanied by W. Ross Strike, pressed a button to add 40,000 kilowatts to Ontario Hydro's resources.

The occasion was the official opening, June 21, of Red Rock Falls Generating Station on the Mississagi River. With the station remotely controlled from George Rayner G.S., the pressing of the button signalled the operator 15 miles distant to start the generators.

Before an audience of 200 people, Mr. Frost admitted that he was an expansionist with tremendous faith in the future of the "North Shore".

"As Canadians we cannot afford to sit on our hands—we cannot afford to be satisfied with past achievements," he stated. "The next 15 years will provide us with greater possibilities for expansion than we have witnessed during the post-war years. But we shall have to take chances."

Turning to the Ontario Hydro Chairman, Mr. Frost suggested that the Commission should not be cautious in acquiring new sources of generation. "We shall need all



ANOTHER CHAPTER in the story of power is revealed in this aerial view of Red Rock Falls G.S. Situated about 50 miles east of Sault Ste. Marie, the plant is controlled from George Rayner G.S., some 15 miles upstream.

forms of energy to develop the Canada of the future," he said. The Premier also warned against selling short such communities as Elliot Lake and Bancroft, whose uranium mines will become an important source of fuel.

Mr. Strike opened the ceremony by saying that Ontario Hydro was turning to the North to develop almost two million kilowatts of hydraulic generation. Some 500,000 kilowatts would be added by 1966.

The development of northern sites and extra high voltage transmission was closely linked with the proposal to amalgamate the northern and southern systems, said Mr. Strike.

"With increasing amounts of power being transferred between the two, it is evident that amalgamation should take place. It is also inevitable that the Northwestern power system be tied in to bring all our resources into one vast pool," he added.

Dedication of the station was conducted by Rev. Douglas S. Warren, Iron Bridge United Church, who likened generating stations across the provinces to the churches—both brought light into the homes.

At a luncheon following the ceremony, in nearby Blind River, E. C. Dash, president, Northland Municipal Electric Association, endorsed previous expressions of faith in the "North Country". Other speakers were John A. Fullerton, M.P.P., and J. Hagger, mayor of Blind River. The A.M.E.U. was represented by N. K. MacKinnon, president, District Nine. ■



# SOUTH RIVER BARBECUE

*Outdoor chefs across Canada are customers of South River's main industry*

*By ADRI BOUDEWYN*

MOTORISTS speeding along Highway No. 11 are likely to pay scant attention to a weathered old sign by the side of the road about 180 miles north of Toronto. It has been standing there for years in the company of two pine trees, and it stands out above other signs containing the usual information about service clubs and churches in the community ahead.

The passing tourist can be in and out of this particular village in less than a minute, but if he is one of the thousands who profess to some skill with the outdoor barbecue, he is apt to detect a familiar odor. And he will recall the sign: Welcome to South River, "Charcoal Centre of Canada."

South River charcoal puts the sizzle in steaks from one end of the country to the other, and it is the mainstay of the local economy. According to Albert McConaghy, manager of the Beaver Charcoal

HIS FIERY WAGON is no cause for alarm. has just been wheeled from e oven and the tars, alcohol and other siduo are burning off. Cart will e run into cooling tank to revent charcoal itself from burning.

Company's South River plant, "the suburban trend to outdoor living has made the production of charcoal a thriving business." And he points to the busy plant which has recently increased production by converting certain operations from steam to electricity and added the popular "briquette" to its output.

Bert says the plant provides employment for up to 450 persons, including those engaged in cutting and trucking wood. The plant was established in 1904, and he has worked there for more than 40 years.

Charcoal making, a centuries-old art and the foundation of the great iron industries of Europe prior to the use of coke, is basically a wood distillation process. The South River operation requires a considerable cordage of wood daily, which is harvested within a 50-mile radius of the village. Virtually any hardwood unfit for quality lumber can be used, but it must be left to dry for one year.

The wood is conveyed from the yard in metal carts, running on tracks, which are driven onto a turntable and shoved into one of the plant's 12 huge ovens. These are heated to a high temperature and the wood never comes into contact with the flames. After distilling, the charred coal (wood) is wheeled out and placed in steel coolers for 24 hours. This prevents the charcoal from being consumed by flame on contact with oxygen. Cooling is repeated in a second set of tanks for a day, and the charcoal is air cooled outside the plant for four more days.

Finally, the charcoal is picked off the carts and placed on a conveyor belt leading to the sifting and crushing machinery. It is then sorted into industrial sizes and 5, 10 or 25-pound bags.

Nothing is wasted. Some of the vapor given off by the roasting charcoal is condensed and the resulting oil and tar supplement the slab wood used to heat the ovens. Charcoal briquettes, preferred by many outdoor cooks, are now moulded, under extreme pressure, from charcoal dust previously wasted.

Tasks now performed by electricity at the Beaver plant include compressing air for the cooling tanks, transferring hot buggies from the ovens to the coolers, operation of the oil and tar burners, and the crushing, sifting and packaging processes.

With charcoal as their economic mainstay, it behooves the people of South River to set an example in the use of this product—and this they do with a will. Just to

THESE MEN are raking lump charcoal from a wagon to a conveyor belt. It will then be crushed, sifted and packaged for barbecues or industrial use.



CORD AFTER CORD of hardwood is shown here in yard of Beaver Charcoal Company's plant. Drying is vital so wood is stacked according to time it was cut.



# Hydro Comes to South River

South River is the youngest member of the Hydro family, having joined earlier this year. For more than half a century the needs of the village were supplied by the South River Electric Company.

When the charcoal plant recently converted from steam to electricity, South River Electric could not meet the energy requirements, and residents voted to become a Hydro municipality. Ontario Hydro has contracted to purchase all the power generated by South River Electric.

For the charcoal plant extra power meant increased production. Steam equipment was replaced by electric motors, and the firm added a "briquette" department to its operations.

The Corporation of South River purchased the distribution system from the local electric company for $73,000. The village now purchases power from the Commission under a municipal cost agreement. Administration of the system is by a committee of council, chaired by V. Teddy.

For South River customers the switch to Ontario Hydro has meant lower rates, with the result that major appliances are now being used more extensively. Former rates were eight cents per kwh for the first 50 kwh, five for the next 175 kwh, and three for the remainder. The new rates are set on a six, three, one point six basis. These figures are likely to be reduced with expected increases in the local use of electricity. ■



*North Bay Nugget*

DAWN OF A NEW ERA was marked when this lineman set the fuses connecting South River with the Ontario Hydro grid.




make sure, the local Lion's Club sponsors what is probably the world's only charcoal festival. Held annually, the two-day event draws up to 2,000 people from the immediate area.

Central attraction is a mammoth 14-foot rotissery, capable of handling 500 pounds of beef at one time. As befits the charcoal capital, its chefs are tops, and each cut is done to a turn. Chickens, hamburgers, hot dogs, potatoes and other items to delight the gourmet and gourmand simmer alongside the main course.

Added features of the South River barbecue include a fish derby, baby show and retriever trials. A grand dance winds up the festivities.

*And a word of advice for the outdoor cook from Albert McConaghy:*

- *Put in a half inch of barbecue base or clean pebbles before the charcoal.*
- *When using a spit, heap the charcoal in the back end, under the hood, about two to three inches high. Place a pan in front to keep grease from dropping in the fire.*
- *Commence with the charcoal six inches below the grill and move up gradually.*
- *Wait until charcoal is red hot before commencing, otherwise the outside of the meat will burn and the inside remain raw.*
- *For thoroughly cooked potatoes or carrots, wrap them in tinfoil and leave them in the coals for 10 to 15 minutes.*
- *When selecting a fuel, remember that it's lump charcoal for flavor, and briquettes for a long-lasting fire.* ■

# ESKIMO VICTORY

HORDES of miniature Eskimos—and a few life-sized ones as well—invaded Ontario from mid-May until the end of June. Some of them camped in public utility displays, others appeared in newspaper and television advertisements.

Operation Eskimo was underway.

Strongest allies of the Northern invaders were 341 of the 354 Hydro utilities in the province. They explained the package promotion of freezers and refrigerator-freezers to appliance dealers in their own municipalities, and enlisted the co-operation of more than 3,000 dealers throughout Ontario.

Many utilities entered still more enthusiastically into the spirit of Operation Eskimo by setting up attractive promotion displays, complete with igloos for their Arctic visitors. Eskimo figures and faces appeared in display windows and inside utility offices, to encourage customer inquiries about freezers and refrigerator-freezers.

Utilities placed hundreds of advertisements in newspapers and on radio and television, to tie in with advertising nationally by the 19 participating manufacturers, provincially by Ontario Hydro, and locally by appliance dealers. Utilities also distributed promotional literature, and issued frozen food certificates to all customers who bought qualified refrigeration units during the campaign.

Just how successful Operation Eskimo was, in terms of units sold, is now being calculated as sales figures from the 19 participating manufacturers roll into Hydro's Sales Division in Toronto. A full report will be relayed to utility and area managers in the near future.

Early sales reports, however, indicate that the public was just as enthusiastic about Operation Eskimo as the municipal utilities were. And that much enthusiasm spells certain success. ■



THIS PRETTY, life size "Eskimo" had a warm smile for visitors to the Port Colborne Hydro display at the local Jaycee Home Show. Miss Eskimo, in this case, is Elaine Biederman, shown fastening an Operation Eskimo sticker to the lapel of A. E. Fort, manager of the Port Colborne utility.



TINY ESKIMO COUPLE who set up housekeeping in Toronto Hydro's appliance shop brought chuckles from visitors. H. L. Paul adds finishing touches to the eye-catching display.

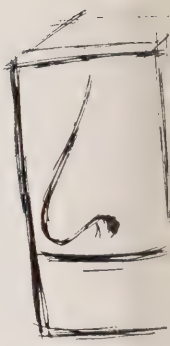


SHOPPERS' ATTENTION was won by this display in a St. Catharines mall. L. E. Richardson of P.U.C. hands out some literature to interested passerby.

Load Building With Facts

# COUNTING NOSES

FIRST OF TWO PARTS





*North Bay Nugget*

SEVERAL UTILITIES are offering electric blankets as draw prizes to encourage return of appliance survey forms. Mrs. G. L. Leblanc, winner of the first blanket offered by North Bay Hydro, is shown in this photograph. She is flanked by Mayor Cecil Hewitt, left, and utility manager B. M. Graham.

Some people, like the Dominion Bureau of Statistics, are counting noses these days. They do it every 10 years.

Others, like Ontario Hydro and municipal utilities, are more interested in counting electrical appliances. This has never been done before at the municipal level and on a province-wide basis.

The man who called on utilities to obtain the facts about electrical appliances used by their customers was W. Ross Strike, now Chairman of Ontario Hydro. Last year, he asked each O.M.E.A. district to set up a Load Building Committee which would encourage all utilities to promote wider use of electricity. All-customer surveys in each municipality, Mr. Strike suggested, would provide these committees with the local data necessary for effective load-building programs and, as well, encourage customers to comment on the service they receive from their utility.

Except in a handful of municipalities where such surveys have been conducted in the past, no all-customer statistics were available for determining market trends and load-building potentials. No one knew for sure just where, why, and how electrical appliances were being used in Ontario.

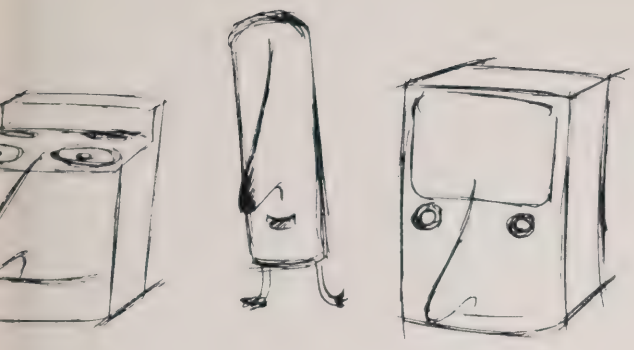
Individual utility surveys would, as well, add valuable information to the comprehensive province-wide appliance saturation survey which Ontario Hydro's Sales Division conducted during the past few months. The survey was aimed at determining reliable provincial saturation figures for a wide range of electrical appliances and equipment.

Ontario Hydro sent questionnaires to some 100,000 customers, selected at random from the 124 municipalities with more than 1,000 residential customers, from 28 local systems and from Hydro's 102 rural operating areas. More than 43 per cent of the questionnaires were completed and returned.

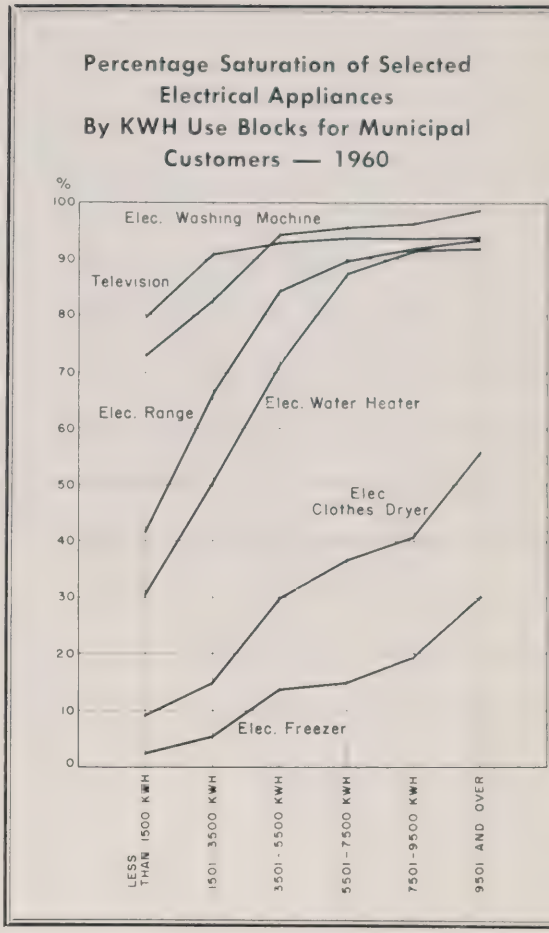
This response from 42,432 customers, or over 2.6 per cent of the 1,600,000 domestic customers served by Ontario Hydro and municipal utilities, provided a more than adequate base for calculating provincial and regional appliance saturation. By comparison, the Dominion Bureau of Statistics, in its intercensal surveys, bases results on answers from only 36,000 households—or less than one per cent—of the slightly more than 4,500,000 households in Canada.

Ontario Hydro was particularly pleased with the co-operation shown by municipal utilities and their customers. Nearly 50 per cent of those surveyed returned their forms with the needed data—a phenomenal response. Utilities whose customers participated in the survey will receive detailed reports later this year. In most cases, the sample size and response rates are adequate and will provide valuable saturation estimates. Municipalities with fewer than 1,000 resident customers, which were not included in the survey, may, upon request, obtain estimates of appliance saturation based on an extrapolation of the results of adjacent municipalities and rural operating areas.

Those completed questionnaires which contained comments by cus-



by Joan Allen



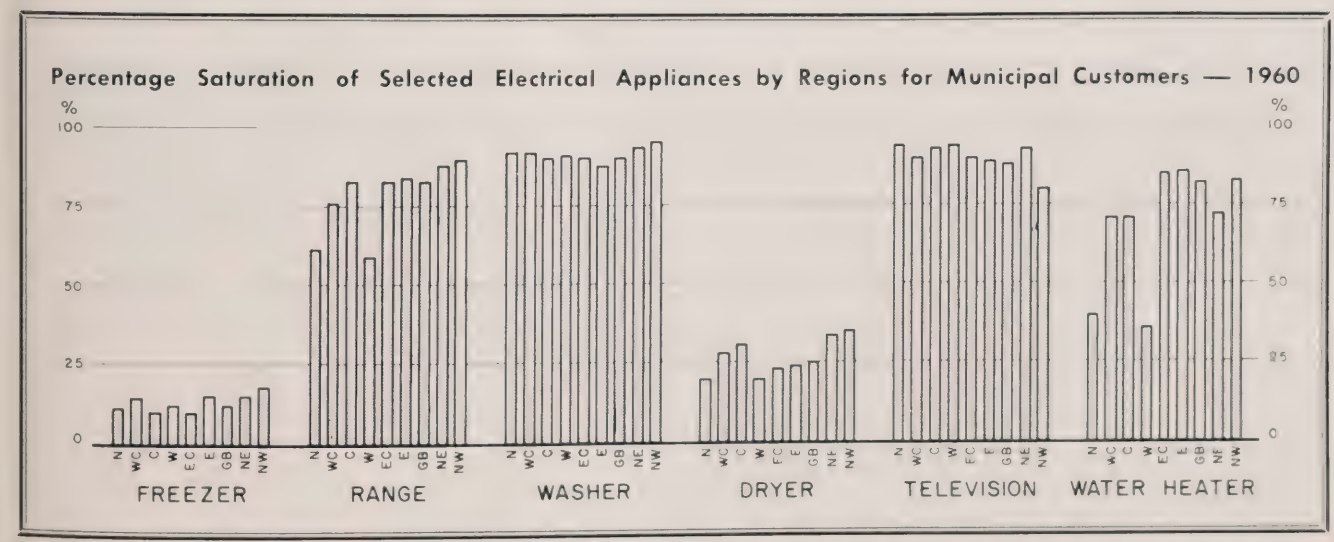

tomers have been returned to participating utilities in order that they may deal directly with customer inquiries or complaints.

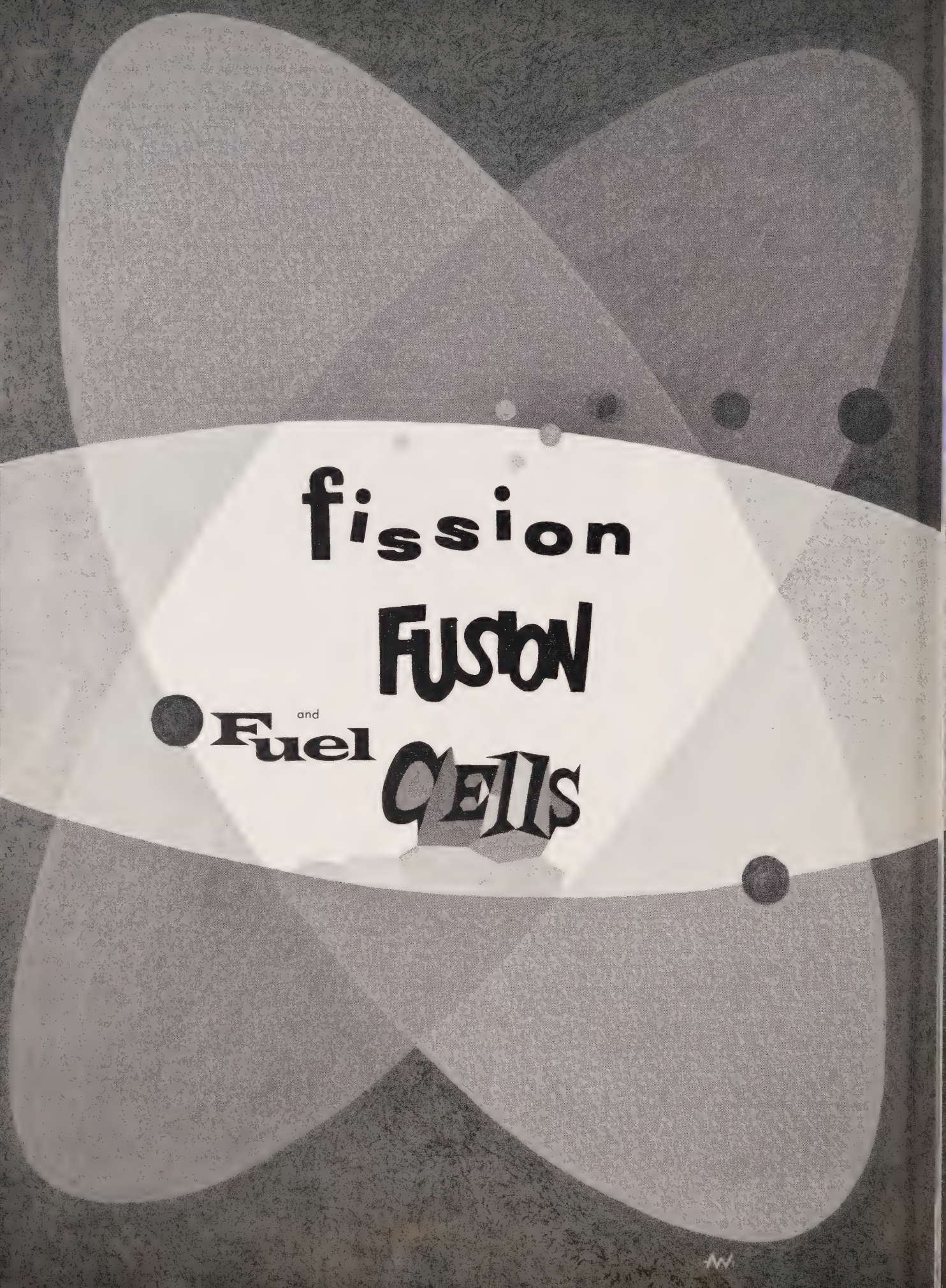
Hydro's survey is just the beginning of the fact-finding investigation of electrical appliances in Ontario. A number of municipalities, particularly those not included in Hydro's survey, are conducting surveys of their own domestic customers. As Mr. Strike has pointed out, all-customer surveys which record the specific use and requirements of specific domestic customers permit the utility to plan a local load-building program with greater accuracy, and reveal any local variations from the over-all provincial picture. As well, such surveys help to strengthen the relationship between individual utilities and their customers, reconfirming the utilities' interest in the customers' electrical welfare.

Some municipalities are carrying out surveys under the direction of their O.M.E.A. Load Building Committee. In District 6, for example, the Load Building Committee reports nearly 100 per cent co-operation of all municipalities, which are using a questionnaire drafted by the Committee in the form of a business card. One section deals with appliances, and will be electronically processed, while the other contains questions about service, which will be processed by the individual utilities. To stimulate customer response, most District 6 utilities are offering prizes in a draw of returned questionnaires.

Door-to-door surveys are being conducted in other municipalities, particularly the smaller ones. Port Elgin Hydro, for example, employed one man who visited over 600 domestic customers and filled in a mimeographed questionnaire for each. Before the survey began, Port Elgin Hydro ran a full-page newspaper advertisement requesting customer co-operation and ex-

*(Continued on page 28)*




fission
FUSION
and
Fuel
CELLS

# E STORY OF POWER

## CONCLUSION

by GORDON MURPHY

PRIOR TO THE INDUSTRIAL REVOLUTION, man's existence depended to a large degree on the time and muscular energy devoted to agriculture and handicrafts. Mechanized equipment and scientific agriculture brought about conditions under which many countries were progressively able to produce more and more goods and services with less and less manpower. Ability to produce competitively became dependent upon energy resources, and consumption of energy became identified throughout the world with standards of living.

Physicists define energy as the capacity for doing work, and generally divide energy sources into three categories—primary, combustion, and that resulting from chemical-physical reaction. Examples of primary sources are wind, solar energy, volcanic steam, tides and falling water.

Wind, which drove the world's navies and merchant shipping for thousands of years, and powered windmills for additional centuries, is now a comparatively unimportant energy source. The first windmills appeared in the Low Countries of northwestern Europe in the 12th Century and for seven hundred years ground the grain and provided mechanical power for small industries. The windmill was largely replaced by the much more reliable steam engine in the 19th Century, but it is still used to pump water in many parts of the world and, in some places, to drive electric generators for rural lighting.

Employment of solar energy on a large scale by concentrating the rays of the sun is being studied in several parts of the world where climate and economic conditions are favorable. Small solar reflectors have been used in remote regions for many years to provide inexpensive heat for cooking, and temperatures exceeding 5,000 degrees Fahrenheit have been achieved with more elaborate devices. It is estimated that the solar heat falling on three square miles of the earth's surface during the day is equivalent to twice the heat released by the bomb that fell on Hiroshima.

Volcanic steam has been harnessed successfully in a few countries, notably in Italy, where one volcanic-steam electric plant produces more than one billion kilowatt-hours a year. Natural steam from geysers drives the turbines of an electric generating plant in

California, and steam from geysers is the energy source used to heat thousands of homes in frigid Iceland.

Time and tide are supposed to wait for no man, but the latter can be made to linger and produce electricity in the process. The trick is to trap the water at high tide and release it, through turbines, when the tide has ebbed. There are few tidal projects in the world at present, but construction is scheduled to begin next year on a major installation on the coast of Brittany which will combine tidal and river power in a station to be built on the estuary of the Rance River, near St. Malo. Scheduled for operation in 1966, this project will have an annual production of 625 million kilowatt-hours. The possibility of a 500,000 h.p. tidal installation on the estuary of the Severn River is being studied by the British government at the present time.

There was a temporary revival of interest in North America recently in the Passamaquoddy Power Project—a long-standing plan to harness the tremendous tides of the Bay of Fundy to provide cheap electric power for the Passamaquoddy Bay region of New England and the Province of New Brunswick. The Bay of Fundy tides are the highest in the world, and engineers have been interested in the Passamaquoddy project for more than 40 years because of the massive flow of tides through the narrow channels connecting Passamaquoddy Bay and nearby Coscooke Bay with the Bay of Fundy. The tides average 19 feet, and every day more than 100-billion cubic feet of water enters and leaves the bays, flowing at a rate of 5,000,000 cubic feet a second.

Backers of the project stress that the flow of water would be enormous, constant and unfailing, and claim that the overall cost of the scheme—estimated at $687,000,000—would be more than justified by an annual average generation of 3,063,000,000 kilowatt-hours.

The International Joint Commission failed to share in this enthusiasm, however, and a few month ago turned down the project as unprofitable under current economic conditions. While ruling out the project as an immediate probability, the Commission did recommend that the issue be kept open in the hope that it might become economically feasible in the future.

Sites where tidal energy is considered economically feasible are relatively rare, but such is not the case with falling water, probably the most productive of all primary energy sources. Energy from waterfalls



The tides have a vast electrical potential.

has been used for centuries, first to power various kinds of stationary mechanical devices, and later, where it has found its most beneficial use, turning turbines in hydro-electric plants.

Water power is the only source of energy employed by man that does not become used up. Coal cannot be replaced. The same applies to gas, oil, and even the redoubtable atom. Water power, however, is provided by the constant operation of Nature in a never-ending cycle. The heat of the sun evaporates ocean water into the air, where the water forms into clouds and falls to the mountain tops as rain or snow. From the mountains, it starts again on its journey to the sea, continuing the cycle which has been an integral part of the universal scheme of things since time began.

The waterwheel, which dates back to ancient Greece, was the first device used by man to harness the energy of falling water, but, up to the end of the 18th Century, the largest wheels for industrial use did not exceed 10 h.p. Application of hydraulic energy to the production of electricity was under way in the last quarter of the 19th Century, but techniques of transmission were largely unknown before 1888, when power was transmitted some two miles to a paper mill in Georgetown, Ontario.

The basic limitation of water power—distance from markets—was progressively overcome by improvements in transmission. High voltage transmission made it possible to utilize electricity far from the sources of energy. This development set the stage for the dominant part hydro-electric power was to play in Canada's economic development in the first half of the 20th Century, particularly in the St. Lawrence - Great Lakes Basin region, which, without access to local deposits of coal, was dependent on abundant low-cost electric power.

Canada is second only to the United States in the development of water power, and sixth in terms of

electrical capacity from all forms of generation. Of more than 114 billion kilowatt-hours generated in this country in 1960, 93 per cent was produced from water power, and 7 per cent thermally. Installation of thermal generating capacity is on the increase in some parts of Canada, however, particularly in Ontario, where most available major hydro resources have been harnessed.

Coal and other fossil fuels are the usual alternate energy sources at the moment, but present projects and plans point to materials which produce heat or electricity as the result of physical or chemical reaction as being the answer to tomorrow's energy needs.

TOTAL ELECTRICAL CAPACITY, 1959

*In thousands of kilowatts*

| | |
|---|---|
| United States | 174,998 |
| U.S.S.R. | 59,140 |
| United Kingdom | 33,820 |
| W. Germany | 24,850 |
| France | 21,573 |
| Canada | 21,109 |
| Japan | 20,650 |

*Dominion Bureau of Statistics and the Federal Power Commission, U.S.A.*

High among the power producers of the future will be nuclear-electric generating plants. The first to create electricity for civilian use went into operation in 1956 at Calder Hill, in England, where an extensive program for the development of such stations is under way. Nuclear plants have since gone into operation in other countries, notably the United States and Russia, and two plants are under construction in Canada.

The first of the Canadian plants, a joint undertaking of Atomic Energy of Canada, Canadian General Electric and Ontario Hydro, is scheduled for operation this year. A second nuclear-electric plant, to be the largest of its kind in the world, will contribute to the Ontario Hydro system by 1965.

Most existing nuclear generating stations are achieving power by the fission of heavy elements, principally Uranium-235, and since the Blind River region of Ontario is believed to hold the largest uranium reserve in the world, it is obvious that Canada would have much to gain from the development of fission-type nuclear reactors. Research, however, never stands still, and work is now going on in several countries, notably Britain, the United States and Russia, aimed at replacing fission with fusion.

Where fission-type reactors derive their energy from splitting atoms of heavy elements, fusion consists of the joining together of light elements, the method by which the sun derives its virtually limitless stores of energy. Controlled fusion—in effect, the creation of nuclear "suns" on earth—would enable man to derive energy from constituents of nature which are all but inexhaustible. Deuterium is an example: it is found in water in a ratio of one part in 5,000 of hydrogen. If—some scientists say "when"—the way is found to extract and fuse together the deuterium atoms, it would be possible to produce 10,000 kilowatt-hours of electricity from a single gallon of water.

While it is generally agreed that conversion of the energy of fusion into mechanical power is between 15 and 20 years away, the prospect of deuterium alone as an energy source brings up the possibility of a supply of energy limited only by the gallonage of the earth's water. From the progress being made in nuclear science, it is clear that the future of man is irrevocably linked with his use of the atom as a source of power — whether he is to be the victor over his environment, or the victim of his ingenuity.

Sources of energy from which electricity is directly produced are also coming to the fore. These include thermionic engines, magneto-hydrodynamic converters and fuel cells—the last being probably the most advanced of these devices in which direct conversion of heat into electricity without the utilization of moving mechanical parts has been successfully achieved.

The first fuel cell dates back to 1839, when it was demonstrated that the electrolysis of water could be reversed in platinum electrodes. By the beginning of the 20th Century, the theoretical capabilities of fuel cell power was clearly recognized. Engineers are now working in many parts of the world to perfect fuel cell units for industrial and home use. The immediate goal is the production of small units of up to 100 kilowatts for special applications. Eventually fuel cells may be competitive with power stations. Developments in this and associated fields could well be shaping the design and size of the generating station of the future. ■



The waterwheel dates back to ancient Greece.

# STRATHROY — a town with a plan

*Last year this progressive Western Ontario community celebrated its centennial.*



by Phyllis Mitchell

As residents of Strathroy walk along the pleasant streets of their community today it is difficult for them to realize it was just a clearing in the forest less than 130 years ago. Since it was incorporated as a village, in 1850, it has known times of progress and times of hardship, but always it weathered the rough going and moved on to new achievements.

Like many other early Ontario settlements, Strathroy owes its existence to the availability of water power for grinding grain. In 1830, following the survey for the Egremont Road from London through what is now the Township of Adelaide, a grant of water power on the Sydenham River, together with 181 acres of land, was made to James Buchanan, British consul at the city of New York.

The grant was transferred to John Stewart Buchanan, who arrived in the area in 1832, where he built a house and a mill. Buchanan came from a small seaport named Strathroy on the north-east coast of Ireland, and he gave to his new home in the wilderness the name which is said to mean Red Valley. Strathroy was incorporated as a village in 1860, and the centennial of this event was celebrated last year. It received town status in 1872.

The community's oldest industry is Strathroy Flour Mills Ltd., founded in 1835, only three years after the first settler viewed the area. At that time it also operated a stave and heading mill, and a cooper shop for making its own barrels.

Today the mills are active around the clock for the major part of the year. A staff of 25 processes eight CWT of Canadian Spring Wheat Flour a day, or seven CWT of Ontario Winter Wheat in addition to operating the feed mill and a retail store.

Also linked with the early history of Strathroy is the firm now known as E. J. Wright Central Ltd., which had its origin in 1865. James Wright was the founder, and in his day business interests centred on organs, buggies, wagons and harvesting machinery as well as other products. At one time Wright's produced hand-made boots and shoes, and operated a tannery.

When Ernest J. Wright, now president of the firm, decided to enter the retail trade in 1898 at the age of 19, his interest in music dominated, and the store he established was one where all manner of musical instruments could be bought. It still flourishes on Strathroy's main street, and there one may buy anything from a violin string to a home freezer.

The firm became known as the Wright Piano Company in 1906, and, up to 1924, it produced thousands of upright instruments as well as numerous player and grand pianos.

Later, Wright's became active in the distribution of domestic and commercial refrigeration. Eventually it commenced the manufacture of steel equipment for retail display and merchandising purposes. The family name is also preserved in musical circles by the Wright Brothers Orchestra, which gained considerable fame in the thirties, and in the popular Don Wright chorus, which was formed in 1950.

The industrial picture is a varied one, with such firms as Glendale Mobile Homes Ltd., Middlesex Furniture Co. Ltd., Strathroy Cabinets Ltd., Vampco Aluminum Products Ltd., and Strathroy Glass Co. Ltd., all active. Heating and cooking equipment; novelties; picture frame mouldings



BEARDS were in style last year when town celebrated its centennial. Mayor Ralph Westgate is presiding in chair marked "We Progress".

OUP is more concerned with the vell-being than the P.U.C. Chairman Winston Pearson, centre, lity business with r David Rolston, left, and Ralph Westgate.




STREET LIGHTING program now underway will transform Strathroy's night time appearance. Fluorescent fixtures are being installed on concrete poles in business section.



STRATHROY may be the only town with the words "City Hall" on its municipal building but it feels sure it can grow to fit the sign.

and tool handles are other articles manufactured in Strathroy. A newcomer—the Midwest Abrasive Company of Canada Ltd. recently completed a new plant for Canadian operations in Strathroy.

As with most Ontario communities, electric power has played an important part in developing industry, and records indicate that it was after its introduction that a high percentage of its industries were established.

Kerosene street lights were introduced, May 2, 1883, at which time Isaac Barron was appointed lamplighter. He received $8.50 annually per light and furnished all oil, wicks and chimneys. Lights were to be lit at dusk and turned out at midnight for nine months of the year except for five nights before and five nights after the full moon.

Electric street lighting did not become a reality in Strathroy until 1889, when the event was recorded as follows:

"On Monday evening last, about 7.20 p.m., the electric lights blazed forth on our streets and soon attracted large crowds of interested spectators, who pronounced the light a brilliant success. Later," the record continues, "the older members of the crowd dispersed, but the little folks held high carnival under the lights on Front Street, indulging in various games."

Civic officials of those days would be amazed at the improvements which have taken place over the years. Since 1959 the Strathroy Public Utilities Commission has conducted a street light improvement program with a three-fold purpose: safer night driving in the busy two-street business section, an increased feeling of safety for pedestrians, and a controlling influence on juvenile delinquency.

The business section is now illuminated by four-tube fluorescent fixtures mounted on 35-ft. prestressed concrete poles. Similar fixtures have also been installed on existing poles in various parts of the town, and the utility plans to continue its program, including the installation of better lighting at principal railroad crossings.

Strathroy P.U.C. had its beginning in 1903, and a contract with Ontario Hydro was signed in 1914. The following year the utility supplied 383 customers, and had a peak load of 113 kilowatts. Today there are 1,600 domestic, 152 commercial and 55 industrial customers.

Power growth has been even more impressive. The peak load supplied by Strathroy P.U.C. in 1960 was 3,579 kilowatts. This is almost double the power consumed ten years ago.

The utility has recently been concentrating on electric heating, and has met with considerable success. There are now six all-electric homes in Strathroy as well as a number of offices partly heated with electricity. Construction of a $1,500,000 hospital is scheduled to commence this year, and it is to be heated electrically. Electric water heaters are also actively promoted, and 86 new installations were made in 1960.

Strathroy's native sons and daughters have gained outstanding recognition in many avenues of life. They include Alexander

Knox, the actor; General Sir Arthur Currie; Major-General William Bethune Lindsay; and the Honorable Sir George W. Ross, a former Prime Minister of Ontario.

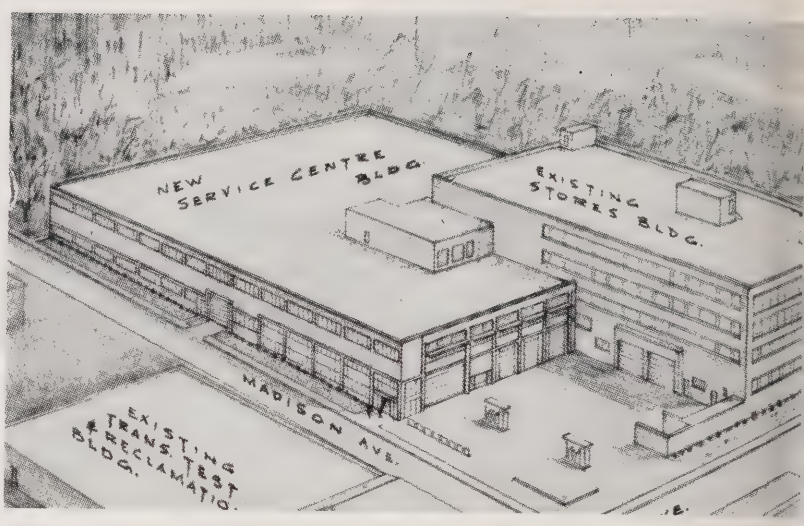
Professor James B. Shotwell, another of Strathroy's native sons, now living in New York was, at various times, Professor of History at Columbia University, an editor of the Encyclopedia Britannica, an expert (United States) at the negotiations preliminary to the Versailles Treaty, and later general editor of the Social and Economic History of World War I compiled by the Carnegie Foundation for International Peace, which he headed for some time.

Another Strathroy citizen who gained almost world-wide publicity was James Broom, who became noted for his creation of the Broom Perpetual Calendar.

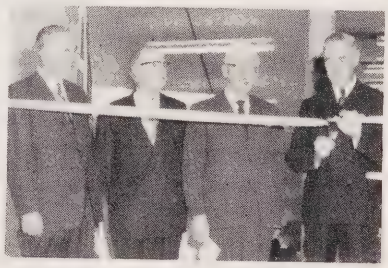
Immigration of Dutch settlers to Strathroy and other parts of southwestern Ontario began in 1947 with increasingly large numbers entering the area from 1951 to 1954, years of near-inflation in Holland. Their influence can be found in the town's John Calvin School. Privately sponsored, it follows the Ontario Public School curriculum, but the Bible is used extensively, and subjects are taught with emphasis on Christian interpretation.

In order to set out definite and consistent policies applying to major land use, and to serve as a guide to the planning board in the exercise of the powers of subdivision control, zoning and construction of public works, an official plan for the town was devised in 1959.

Residents generally agree that Strathroy is a pleasant place in which to live, and that it has many excellent facilities usually found only in larger centres. Population has climbed from 3,688 in 1951 to 4,850 at the present time. Aided by the town's master plan, the goal is an even more attractive community in the years to come. ■




GENERAL LAYOUT of the integrated, efficient Toronto Hydro service centre is indicated in this sketch. Garage, which occupies a major section of new building, will accommodate 185 utility vehicles.



TORONTO HYDRO Chairman Bertram Merson cuts the ribbon declaring new service building officially open. Others, from the left, are: Harry Hyde, general manager and chief engineer; John McMechan, vice-chairman; and Mayor Nathan Phillips, commissioner.

### $2½ Million Toronto Addition

One of the finest and best equipped service buildings maintained by a public utility in Canada was opened recently by the Toronto Hydro-Electric System. The new building contains the Garage and Meter Departments, and houses some Station Construction and Service Maintenance Department facilities. It has been integrated with the existing stores building, and is adjacent to the transformer testing and reclamation centre, the cable yard and the pole yard.

A two-storey structure with partial basement, the new building has a total floor area of 160,000 square feet. The garage, which will accommodate 185 vehicles on three levels, has been designed for maximum efficiency.

Vehicles enter at the ground floor level and proceed to the

# SUPER SERVICE CENTRES

various areas by means of ramps and driveways. Wide aisles and continuously accessible parking stalls speed up inside traffic. All three entrances are equipped with automatic and manual door controls.

Provision for loading supply trucks within the garage was made by opening a side of the existing stores building and forming an inside loading dock. The floor level of the meter section was made 27 inches higher than the garage floor to facilitate loading from the Meter Department shipping and receiving rooms.

An outstanding feature of the new building is the heating system. Among the largest electric heating installations in the province, it utilizes several different types of equipment. The vehicle storage areas are heated by fresh air driven through a central shaft, after passing through a primary electric strip heater and an electro-static air cleaner. Temperature of the air is further raised by electric heaters to meet the needs of each area.

About 80,000 cubic feet of fresh air per minute, filtered and heated, can be supplied to the garage storage areas. Before being expelled to the outside, the exhaust air is passed through heat exchangers to extract its heat. A heat pump delivers this heat to the garage office and Meter Department areas. The same heat pump functions as a cooling machine during the summer, providing air conditioning for garage offices, Meter Department, trouble gang rooms and lunch rooms.

Other areas are heated by individual, under-window units combining heating coils, cooling coils and circulating fans. Fan-type electric heaters containing steam coils are also employed. Mechanics particularly appreciate the electric heating cables installed in the floors of the garage repair bays. The total heating load is estimated at 2,500 kilowatts.



THIS NEW GARAGE of the Scarborough P.U.C. was an important step in the utility's long range building plans. Adjacent to the existing stores and service building, the garage provides over 21,000 sq. ft. of floor space.

Lighting throughout the building is designed to I.E.S. standards and utilizes higher than usual voltage. Distribution voltage inside the building is 416-volt, 3-phase, 4-wire. All fluorescent lighting operates at 240 volt, single phase, taken from phase to neutral. Incandescent lighting, small motors and special services use 120 volts.

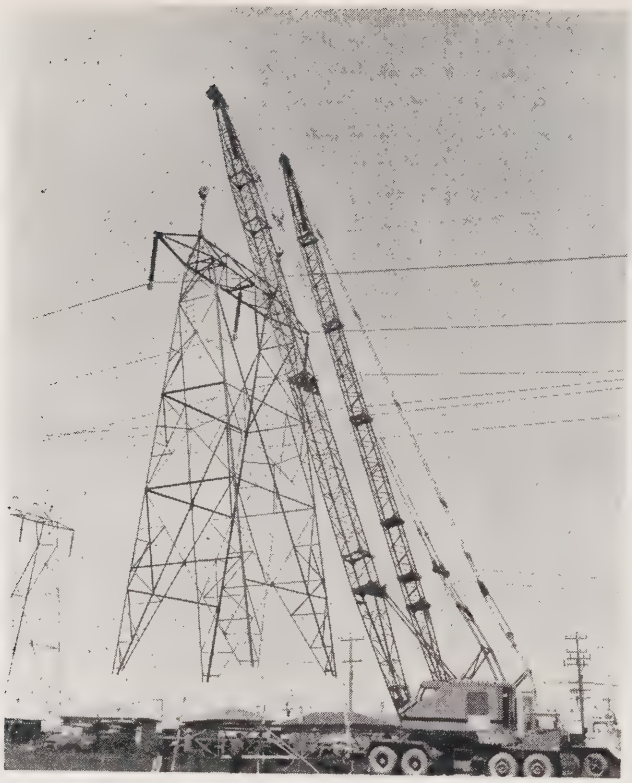
Machine, electric and carpenter shops use 12,500 square feet of the new building, and minor areas are occupied by street lighting, station battery, radio repair and distribution construction sections.

### Progress at Scarborough

A modern, electrically-heated garage able to accommodate some 40 vehicles is the latest addition to the Scarborough P.U.C. service centre. Built at a cost of $172,239, the new garage is adjacent to the stores and service building which was occupied in 1959.

The garage is of brick and block construction with steel columns supporting a steel truss roof. Its dimensions are 228 feet by 96 feet. Heat is provided by 12 electric unit heaters suspended from the ceiling and individually controlled. Total installed capacity of the heating system is 410 kw at 575 volts.

Future plans call for the erection of an engineering building, a central supervisory control system, and an addition to the stores building. The garage design makes provision for further expansion. ■







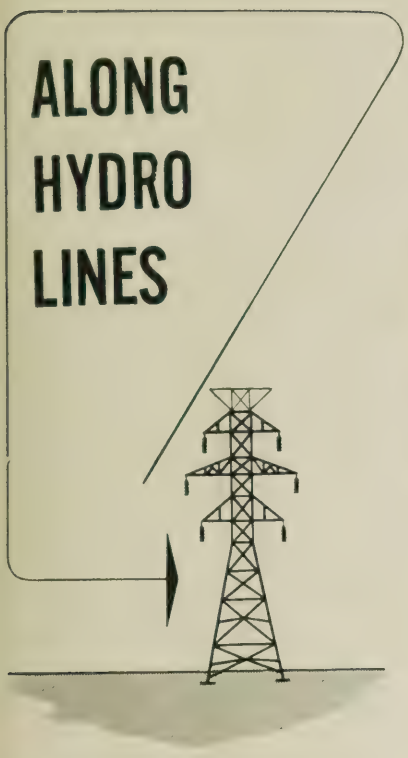
# UPS - A - DAISY

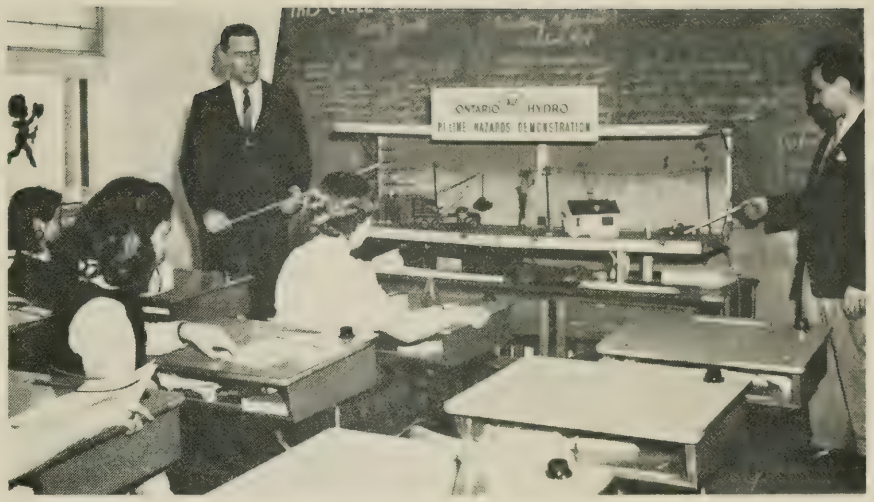
Planning paid off recently when Central Regional and Markham Area staff used two cranes to move a 73-foot tower a distance of 40 feet. Power on the 230,000-volt line was off nine hours and three minutes: under the conventional method the interruption would have been much longer.

Hydro moved the tower away from Scarborough Golf Club Road in Metropolitan Toronto after the Township decided to widen the road. The job was complicated by adjacent 27,600-volt lines that had to remain in service. Although the actual move only took half an hour, the additional time was needed for preparation and completion of the hook-up.

Top photo shows the air lift: note the conductors still attached. Photo (top right) shows the front of one of the cranes next to a new 10-foot extension at the base of the tower: the timber tracks were used to get the cranes across a muddy field. Photo (right) depicts the moment of arrival with the sections ready for bolting. ■

# ALONG HYDRO LINES






## Hi-Line Hazards

POWER SHOVELS, T.V. antennas and children's kites are all bad medicine when carelessly handled in the vicinity of power lines.

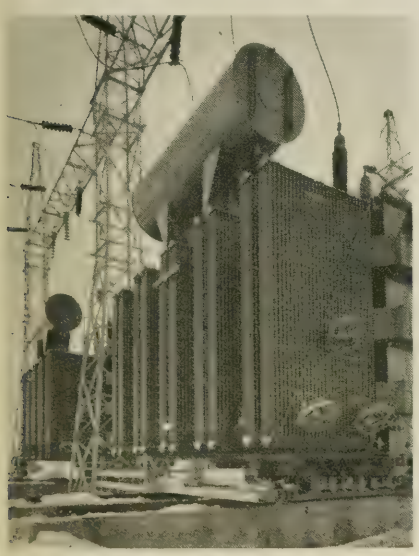
These hazards have been effectively brought home to student and adult groups throughout the province by means of an animated display designed by Ontario Hydro for use by qualified lecturers. One is located in each of the nine Hydro regions, and they are made available to interested municipal utilities.

The display is shown here at Guelph's King George Public School. Lecturers are Ray Middleton and Jim Bard of the Guelph Board of Light and Heat Commissioners. ■

### New control centre

Construction of the second stage of Ontario Hydro's new Hawthorne Transformer Station has been completed on a 48-acre site on Ottawa's Ridge Road. Further expansion will be carried out in accordance with system requirements.

The new terminal station is the load despatching centre for the Eastern Region. Operation of 10 hydro-electric plants is directed from its modern control room. These include the Robert H. Saunders - St. Lawrence station, three plants on the Madawaska River, and the Des Joachims, Chenaux and Chats Falls developments on the Ottawa River.



Equipment at the new station includes two of the largest power transformers ever installed in Eastern Ontario. They are rated at 225,000 kva, and link the 230 and 115 kv systems. The units each weigh 226 tons.

### St. Marys joins half century ranks

Power from the Niagara first came to the Town of St. Marys in May, 1911, and in tribute to a half century of electrical progress, the St. Marys Journal-Argus recently had this to say:

"Your Public Utilities Commission is your representative in what is now generally known as Ontario Hydro. Through them you, as citizens of St. Marys, are partners in this great enterprise carried on under public ownership. And through active associations your elected representatives have a strong voice in the operation of Ontario Hydro.

. . . "Tribute is due to those persons of our community who have had faith and foresight in joining the Hydro family and in providing our local needs for Better Living Electrically."

In describing the growth of the local system over the last 50 years, the article pointed out that the number of customers had grown from 300 to 1646, and that load had increased from 100.4 kilowatts to 9,890 kilowatts during the same period. It noted that costs had dropped from $50.66 per kilowatt to $40.57 per kilowatt, "truly a remarkable record in comparison with other markets and the economy of the past fifty years."

# municipal briefs

**Certificates of merit** for completing two years without a compensable accident have recently been awarded by the Electric Utilities Safety Association to 78 Ontario municipal utilities. One year merit certificates went to 23 utilities.

**York Township Hydro** plans a 1961 expenditure of $463,000. Largest single item is $180,000 for the purchase of water heaters for rental purposes.

**Brockville P.U.C.** has approved an across-the-board increase in wages for its office staff and outside crews of approximately five per cent. The decision was based on a comparison of wages in utilities of comparable size. Linemen will be classified according to provincial formula.

**Underground hydro services** will be installed in a new land assembly project at St. Thomas, providing the P.U.C. is reimbursed for the extra expenditure involved. The difference between overhead and underground installations was estimated at $155 per lot. The commission felt it would be unfair for all hydro users to pay for underground services in new subdivisions.

**Preston P.U.C.** is offering rebates as a load building incentive and to encourage subdivision contractors to provide underground wiring. Under the plan, contractors pay $200 extra for the underground service and receive up to $180 in rebates depending on the electrical appliances installed. Earlier, Galt P.U.C. announced a similar plan, except that all of the $200 may be rebated.

**Guelph Hydro** estimates 1961 expenditures at $609,700. Street lighting improvements will cost $160,000, and $24,000 is slated for water heater control equipment.

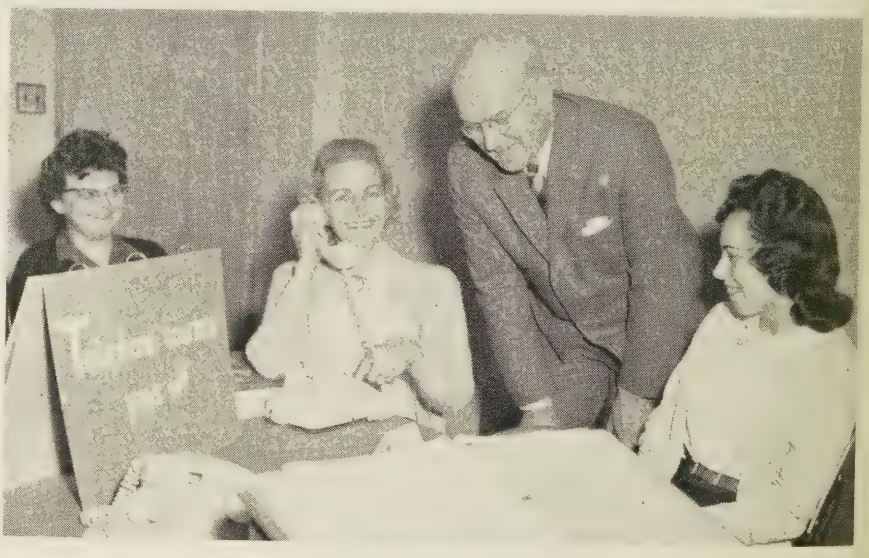
**Metropolitan Toronto** public utilities co-ordinating committee has recommended to the city and suburbs that greater emphasis be placed on planning the location of utility services. In a letter to the councils of the area municipalities, J. D. George, chairman of the committee which represents hydro, telephone, gas and other service installation organizations, has suggested that in zoning and land use consideration be given to the requirements for utility services. Area councils have been advised to consult the committee in planning redevelopment projects and authorizing new subdivisions.

**Continuing its record** as the fastest growing union in Canada, the National Union of Public Service Employees has recently assumed bargaining rights for civic employees in Sarnia. Five years ago NUPSE had 12,000 members, four-fifths of them in the Ontario Hydro Employees Union. Now NUPSE has 28,000 members and less than a third of them are with Ontario Hydro.

**Barrie P.U.C.** has completed a $153,000 lighting program, and the city now is believed to be the only one in North America lighted entirely by fluorescent fixtures. Some 1,100 of the new lights have been installed, all rated at 174 watts.

**Stratford residents** may soon be able to borrow up to $500 from the P.U.C. for the purpose of rewiring or improving electrical facilities in their homes. The utility is studying a plan now in effect in London before making a decision.

**Kitchener P.U.C.'s** appliance shop recorded its second straight loss after eight consecutive years in the black. The city's annual report indicated that the store had a $15,596 operating loss in 1960. The year before it lost $9,939. But the net loss was only $5,048 and



## The Chairman Talks Public Relations

A STAUNCH ADVOCATE of sound public relations, Ontario Hydro Chairman W. Ross Strike recently took time out from a busy schedule to attend a training session in public relations at Bowmanville, his home town. He is shown checking the telephone technique of Marilyn Webster, left, Bowmanville P.U.C., and Gladys Kean and Madelon Madill of the Bowmanville R.O.A. Since the first of this year, the Information Division of Ontario Hydro has presented over 350 sessions in public relations to the staffs of municipal utilities and area offices. The continuing program will encompass all regions. ■

$345 for the two years, since some of the operating costs are charged against the gas and electric departments.

**Sudbury Hydro** is extending its public relations program to include personal contact with the consumer through talks delivered at local service clubs and other organizations. Outlining his utility's promotional efforts before the Lockerby Kiwanis Club recently, Sudbury Hydro Chairman W. E. Edwards said that 25 city homes were now electrically heated, and that all owners were "extremely happy."

**The economic stimulus** represented by municipal utility expansion and improvement is indicated by these recent estimates of 1961 expenditures: North York Township H.E.C., $2,754,876; Niagara Falls H.E.C., $200,500; Scarborough Township P.U.C., $1,587,602; Sarnia H.E.C., $429,500; Welland H.E.C., $1,093,174 (including purchase of facilities in annexed area); Dundas P.U.C., $325,000.

**Power was turned** on recently in North York's first subdivision with underground wiring. The system serves 26 homes in the Donna Court area of Willowdale.

**Rate adjustments** for 1961 designed to provide more revenue have been announced by the hydro utilities of Scarborough, North York, York Township, Welland, Rockwood and Moorefield. Bothwell and Sandwich East have revised their rates downward.

**Last month** Ontario Hydro News wrongly reported the retirement of C. A. Walters as general manager of Napanee P.U.C. Roy Lawrence, the man named in last month's report as succeeding Mr. Walters, is actually the new manager of the town's waterworks department, under Mr. Walters. George Reed continues as manager of the electrical department. C. A. Walters is thought to be the only Ontario municipal utility manager to have built his town's distribution system and remain active today to manage it. He supervised the building of the system in 1906—which makes him something of a dean among the province's municipal utility managers.

**Brockville P.U.C.** manager H. W. Little was elected to a second term as president of the Brockville Electrical Bureau. The Bureau represents all phases of the electrical industry and promotes the use of electricity in home and industry. ■

### Mr. Scott of Belleville retires after 48 years

Oswald H. Scott, Belleville's "Mr. Hydro" for almost half a century, has retired.

Mr. Scott has been general manager of the electric utility since 1913 and secretary manager since 1929. He is shown at right in the photograph receiving congratulations from Ernest L. Burnham who has been named acting manager.



A native of Oshawa, Mr. Scott came to Belleville in 1913 as manager of the Trenton Electric and Water Company which supplied Belleville's electrical requirements. The Ontario Government purchased the privately-owned system in 1916 and it was operated by Ontario Hydro until 1929, when it was taken over by the city.

Mr. Scott became secretary-manager at that time and continued in this dual role after 1937, when the gas and water utilities merged with the electric utility under the Belleville Utilities Commission.

A graduate of McGill University, where he studied civil engineering, Mr. Scott served for many years on the executive of the A.M.E.U. and was president for two terms. He became an honorary member in 1951.

He was a trustee of the Canadian Section, American Water Works Association for three years and president for one year. In recognition of this service he was granted the Fuller Award for the Canadian Section in 1954.

Mr. Scott is a brother of C. B. C. Scott, Ontario Hydro's assistant general manager, Personnel.

Ernest Burnham, who has assumed Mr. Scott's duties, has been assistant manager at Belleville since 1955. He is a graduate of the University of Toronto in mechanical engineering and served with the Peterborough Utilities Commission before coming to Belleville. ■

### Dunnville Hydro in new quarters

To maintain its high standard of service and meet the fast-growing electrical requirements of the community, the Dunnville Public Utilities Commission recently moved into a new building on Alder Street.

At the ceremonies attending the opening, J. R. McCullough, manager of Ontario Hydro's West Central Region, said, "I am happy to declare this building open for business, better business, and more of it."

More than 300 visitors took advantage of Chairman James A. Camelford's invitation to inspect the new premises.

The board room of the new headquarters is finished in mahogany, while the general office and that of Manager John Dawson, is finished in knotty pine. Electric cable has been incorporated into the sidewalk as a safeguard against sleet and ice.

# press comment

AMHERSTBURG P.U.C. is justly proud of its newest electric heating installation. And apparently the whole town of Amherstburg shares in this pride. The following comment is from the Windsor Star and appeared in the popular column "NOW" by H. L. MacPherson.

"Amherstburg not only has Ontario's first electrically-heated house, it's also going to have the province's first electrically-heated gymnasium as well. Probably the first one of its kind in the whole Ontario - Michigan area. Fred Bridle, manager of Amherstburg's Public Utilities Commission, feels pretty good about it, and has every reason to be proud of the electrical pioneering there.

"The gymnasium-playroom, at the St. John the Baptist School, will be the first electrically-heated one in Canada, as a matter of fact. The heating will be by 'infra-red radiant luminator,' which offers a combination of economy and efficiency. The temperature can be kept low when the place is not in use, then, with a flick of a switch, the heat comes on like a warm sun.

"'A coming thing,' says Mr. Bridle of electrical heating. In fact it's termed the first method of heating 'without a bonfire in the home,' making it a real breakthrough in human living. Did we read somewhere that Ontario Hydro may cut its space heating rate below the present level of 1.5 cents per k.w.h.? Could be. In any case, it still permits the heating of 25 per cent of a home area (and perhaps a bit more) at the lowest domestic rate, which in Windsor is .7 cents per k.w.h.

"The other day it was regretted here that there isn't a thermostatically-controlled, plug-in baseboard panel heater of about 1,000 watts on the market to take care of cold corners, etc. We'd been unable to find any of them advertised or displayed here, but Mr. Bridle says they exist, they're good, and some dealers in Windsor have them. Which just goes to show that if you want to make sure something exists, suggest it doesn't."

FOR those who might be lulled into a false sense of security by the prevailing interest in electric heating and all-electric homes, we quote the following from the Toronto Globe and Mail:

"The Canadian house of 1971, as seen through the eyes of the natural gas industry, will be a gas promoter's dream.

"All power will come from gas. The walk, the driveway and patio will be gas-heated, eliminating the need for snow shovels. Gas-operated kitchen appliances will fold out of sight.

"The gas home of 1971 was described to the annual convention of the Canadian Gas Association by S. F. Wickstrom of New York, director of the American Gas Association's promotion and research plan.

"New-type construction materials and new building techniques will make the future house one anyone can afford, he said.

"The major source of heat will come from catalytic units, or flameless burners, instead of open-flame combustion.

"Electricity will come from gas fuel cells. Gas outlets will permit the use of portable gas appliances, such as infra-red lamps to heat the patio when the temperature cools and a grill cart for outdoor cooking.

"The kitchen will be equipped with infra-red cooking equipment, and gas-operated waste disposal."

### Big power source

Though only 35 miles long, the Niagara River is one of the world's largest sources of hydro-electric power. The combined capacity of Ontario Hydro's Niagara plants is more than 2,000,000 kilowatts.

### Modern Stouffville Office

For the first time, Stouffville P.U.C. has a home to call its own—a neat and efficient 40′ by 60′ concrete block building on the main street. Built and furnished at a cost of about $27,000, the new headquarters are electrically heated and provide space for a general office, board room, meter room and private offices. The garage is a separate building at the rear.

## COUNTING NOSES

*(Continued from page 15)*

plaining why the survey was being carried out and what questions would be asked.

Thedford Hydro has visited 184 domestic customers, asking questions about service entrance, hot water heating, house heating, appliances and repair service facilities. Partly as a public relations gesture and partly as an educational service, each customer received two 15-ampere fuses.

North Bay Hydro is one of the larger municipalities conducting a survey of all domestic customers in addition to the one carried out by Ontario Hydro. The utility is mailing questionnaires to its 6,273 domestic customers with their bimonthly bills. Weekly draws for electric blankets encourage customers to return their completed questionnaires. The utility expects to publish results of the survey in the local newspaper.

The story of electrical appliances in use by customers in Ontario municipalities is being further revealed as more and more utilities undertake domestic customer surveys. Tabulating the survey results, however, is only the first step in a long-range load-building program in each municipality, each district, and throughout the province.

Some of the load-building and customer relations opportunities inherent in information gleaned from these domestic customer surveys will be discussed in the next issue of *Ontario Hydro News*. ■

# OFF THE WIRES



Quick action on the part of three members of Ontario Hydro's Brampton Area Staff helped save the life of a construction worker who was badly burned in a recent electrical accident involving a crane and an overhead rural distribution line. Summoned to the spot by a Bell Telephone repairman, the line crew lost no time in applying the first aid skills they had learned in regular training sessions. They continued artificial resuscitation as the ambulance sped to the hospital. Examining physician Dr. Van Oram stated that the men's action had definitely aided the injured man's breathing and possibly saved his life.

* * *

Earlier in the year, Bruce Collins of the Port Stanley P.U.C. revived a 27-month-old child who had been taken unconscious from Lake Erie. Bruce performed mouth-to-mouth resuscitation for six or seven minutes before there was any sign of revival.

* * *

The sublime privilege of saving a life has also been experienced this year by Anthony de Houdyker of the Scarborough P.U.C., who revived a victim of electric shock after 10 minutes of resuscitation.

* * *

In addition to the great personal satisfaction their acts must engender, these men deserve thanks as our best possible ambassadors of good will. As Roy Beith, manager of the Electric Utilities Safety Association has said, "There are not too many of us who can actually say 'I brought a man back to life'."

* * *

A deadly serious business, resuscitation has its lighter aspects. At Levack, near Sudbury, a tiny Chihuahua dog owes its life to resuscitation. The animal made the almost fatal mistake of chewing its way through an electric cord. The owner was about to perform burial rites when his wife, a registered nurse, took over with artificial resuscitation. After 20 minutes the dog responded. Now in good health, he no longer likes the taste of electric cord.

* * *

After their baby brother fell into the water, two boys in New Zealand told their mother: "We tried to give him artificial respiration but he kept getting up and walking away."

* * *

Galt P.U.C. is a little sheepish about it all. Brought forth at a regular commission meeting, the idea of renting sheep to keep the grass clipped on eight acres of land surrounding a new reservoir was shelved after closer consideration. The need for a shepherd to feed, water, and fend off marauding dogs mitigated against it. Instead, the meeting authorized purchase of a large, motor-driven lawnmower.

* * *

Dr. Lee de Forest, 87, inventor of the three-element vacuum tube, died recently in California. Relatively little known to the public, Dr. de Forest set the stage for the electronic age with the invention of the three-element tube in 1906. It made possible the development of radio broadcasting, television and radar. The inventor-scientist held more than 300 patents and contributed to transcontinental and transoceanic telephoning, sound movies, aircraft-guiding beams, wire transmission of pictures, cosmic ray measurement and many other developments. He celebrated his 84 birthday by applying for a patent of a four-inch thick television set.

* * *

Gordon Beatty and his four commissioners of the Acton H.E.C. are gaining notoriety as rain makers. According to the Guelph Daily Mercury, almost every heavy snow storm of the past winter began on the second and fourth Thursdays of the month during regular commission meetings. Spring brought no change, except that the snow turned to rain. And so into the summer. After a recent two-week spell of torrid weather, gardeners were crying for moisture when Thursday rolled around.

"Even before the commission assembled," the paper noted, "rain began to patter, heralding heavy showers and later, an ear-splitting thunderstorm. Acton's rainmakers were back in business, performing by remote control a service far beyond the call of duty." After settling the weather, the commission dealt with the problem of low power factor correction.

* * *

If the Ontario Federation of Agriculture has its way, another chore will be added to the long list of jobs performed by Hydro down on the farm. Among the resolutions passed at a meeting of the federation was one approving a hydro-powered electric fence, providing the installations have the backing of Ontario Hydro and the Canadian Standards Association. Not much of a load-builder, perhaps, but the cows are likely to get a kick out of it. ■



SCI. MED. DIV.

ONTARIO
# HYDRO NEWS
SEPTEMBER, 1961



How hydraulics helped the doctor is explained on page 2

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# ONTARIO HYDRO NEWS

SEPTEMBER VOL. 48 NO. 9

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## ABOUT THIS MONTH'S COVER

THE researcher on this month's cover is peering into a problem that has a profound bearing on the well-being of mankind. He is a member of Dr. Fraser Mustard's team which is following a promising line of research into the causes of atherosclerosis—suspected of underlying the "heart attack" and "stroke". The Toronto specialist has enlisted the aid of Ontario Hydro in one phase of his endeavors, and the first of two articles on this subject commences on page two of this issue.

Editorial

# STOCKADES ARE NO DEFENCE

THE word "Hydro" has taken on a meaning in Ontario which it probably doesn't possess anywhere else in the world. Defined in the dictionary as "having to do with water", Hydro has become synonymous in this province with electricity and with the utilities which are responsible for its generation, transmission and distribution. Thanks largely to the calibre of the people who have been attracted to its service, Hydro has also come to represent quality and integrity.

This wide public acceptance is indeed gratifying, but success breeds its own dangers. Year after year of progress can set the stage for complacency, and it is vital to remember that there is no built-in growth rate, and no market which belongs to the suppliers of electricity by divine right. Even the finest record is but the shadow of a dead past. It is the future that counts, and it doesn't require a crystal ball to foresee the challenge that lies in the years ahead.

Some indication of the kind of competition which is building up for tomorrow may be found in the article "Do It Yourself Electricity" appearing on page 6 of this issue. Small, packaged gas turbine generating sets and gas-activated fuel cells represent a particular threat since, ostensibly, their users could dispense entirely with the services of the electrical utility.

And these are only two fields in which the gas companies are searching for efficient and economical means of changing gas to electricity. Research is also being pressed in the realm of thermo-electricity and thermionic conversion—potentially as formidable as they sound—and both offering some promise as a means of rendering the electric utility obsolete.

Granted that most of these developments are still only a glint in the gas company's eye, success in any one of them could spell trouble for the electrical industry. More important at this stage, perhaps, is the insight such projects provide into the "think big" attitude of the competition. Certainly they are not calculated to bring comfort to the utility manager who resents having "the pastoral serenity" of his office disturbed.

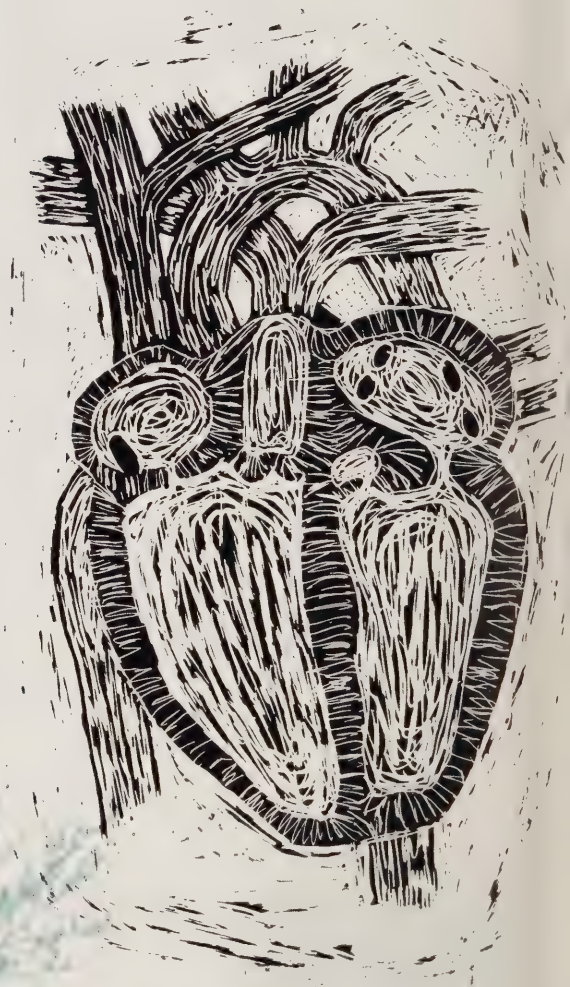
The quote is from a paper delivered by David Pope, manager of Sandwich-West Hydro, at a recent meeting of the Electric Heating Association. Perhaps we can borrow further from his colorful prose for a description of an attitude which may be all too prevalent.

In searching for reasons behind the luke-warm approach to electric heating adopted by some utilities, Mr. Pope said:

"The utility people may have spent many years building a neat little stockade of rules and regulations with sharp points on them, and now they want to sit back and enjoy the sun coming in over the top. The stockade keeps them safe from their customers and, if they stir themselves at all, it is to patch up any chinks or cracks that have appeared. They don't care to become involved in something outside the fence."

Instead of the sun peaking over the pickets, the manager who adopts this attitude is likely to be caught in a deluge—for a stockade has no roof. The only real defence against competition is a live-wire approach to sales promotion, customer relations and the broader field of public and community relations, research, load building, service and every facet of utility operation. In short, stockades and ivory towers are out. The utility executive must run his business as though a two cent decline in the dividend rate would bring a horde of angry shareholders in pursuit of his scalp. His competitors do. ■

# HYDRO LENDS A HAND A



*Sometimes, widely differing branches of science and technology converge on a single problem with surprising results. Take heart and blood vessel research on the one hand and the study of hydraulics on the other. It is difficult to imagine how the one could supplement the other. Yet this is what has recently been happening in Ontario.*

*Here is the first of a two-part article on an unusual contribution which Ontario Hydro hydraulic engineers have been making in the field of medical research.*

# EART RESEARCH

FIRST OF TWO PARTS

**story by Ron Kenyon**

**photos by Harry Wilson**

Over the last half century, the study of hydraulics has been as important at Ontario Hydro as the ABCs in kindergarten. In fact, in that period the Commission has firmly established a world-wide reputation as a foremost authority on the subject of hydraulic engineering and hydro-electric power development.

This is in no way surprising. Flowing water has long been this province's most important source of power for electricity, and down the years a wealth of skill and experience has been built up that manifests itself today in one of the world's finest staffs of hydraulic engineers and technicians.

The dictionary defines hydraulics as the action of water or other liquids in motion.

The principle obviously applies in the design of hydro-electric generating stations where water must be conducted through closed conduits. Here, the action of the water will depend upon the design of the passage which carries it.

As an aid to their research in hydraulics, Hydro engineers have devised models of many kinds that will allow testing of the forebays, penstocks and other water-carrying parts of a proposed generating station before it is ever constructed.

It is model building for a purpose; model building which has saved the Commission and, ultimately, the consumers of electricity, millions of dollars.

One very valuable segment of hydraulic research at Ontario Hydro has been the use of plexiglass in building miniature models of closed conduits. Plexiglass is a hard, tough, transparent plastic substance, the material from which the gun turret bubbles on World War II aircraft were made.

Despite properties which make it an excellent material for the purpose, plexiglass presents many diffi-

culties to the model builder, who must produce critically exact models of conduits. Ontario Hydro is one of the few organizations in North America with a satisfactory technique and the facilities for working with plexiglass.

Requirements are, of course, that the plexiglass exactly duplicate the planned conduit, and that its inner wall be perfectly smooth, so that it offers no resistance to the water and no place where particles might be helped to lodge.

With such a model it is possible to watch the fluid flow through the transparent walls and to know that any silting is the direct result of the manner in which the water is moving.

In recent months, while Ontario Hydro engineers were continuing their research on hydraulics, medical science was at grips with a research project of a vastly different nature—one which, it seemed, could have no possible relationship with the problems confronting hydraulic engineers.

At Toronto's Sunnybrook hospital—as at dozens of other hospitals and medical research institutions throughout the world—doctors were probing the cause or causes of atherosclerosis. Directing one of the projects at Sunnybrook was Dr. Fraser Mustard, a noted Toronto specialist.

Atherosclerosis is a form of hardening of the arteries in which scaly deposits are laid down on their inner walls. If you were to compare an artery to a steam pipe, then atherosclerosis is roughly equivalent to the lime deposit or boiler scale which builds up in the pipe. It is a condition which appears to be the cause of some of mankind's most persistent and troublesome ailments, among them, coronary artery disease and cerebral thrombosis.

Millions of words on the subject are printed each year in scientific medical journals, and, although a great deal has been learned, the complexities of the problem are so great that much remains to be found out.

Coronary artery disease, which leads to the only too well-known "heart attack," is the principal single cause of death in Canada. Some 60,000 Canadians die of it each year—about three times the toll taken by cancer.

The disease is due to a narrowing or blockage of the coronary arteries—the blood vessels which nourish the heart muscle. It seems an extraordinary thing that the heart, which is full of blood and is the pump that supplies it to other parts of the body, can perish due to a lack of blood. Yet, this is what happens.

Cerebral thrombosis—more commonly called a "stroke"—is caused by a somewhat similar condition that can occur in the brain. In this case, blocked or narrowed blood vessels prevent sufficient blood from reaching parts of the brain.

What, then, causes the condition, atherosclerosis? Obviously there is something wrong either with the blood or with the arteries. The human blood is an immensely complex fluid containing millions of different constituents. Which of these are responsible and for what reason?

Alternatively, could there be some flaw in the wall of a blood vessel that would cause certain blood constituents to adhere?

Perhaps atherosclerosis results from a combination of the two things.

Some facts are known. For example, people with blood vessel disease tend to have more than average quantities of fatty droplets, and particularly of cholesterol, a white, waxy substance, in the blood stream. The increase in cholesterol appears to cause an increased stickiness of the tiny blood platelets which are components of the blood responsible for clotting. This stickiness of the platelets makes them more prone to deposit on a blood vessel wall, causing a clot or thrombosis. In addition, when atherosclerosis occurs, the artery walls can become calcified and ulcerated.

At Sunnybrook, Dr. Mustard wanted to know whether there was, perhaps, any way of proving how and why the blood platelets deposit in the exact places they do.

But how could such a study be made?

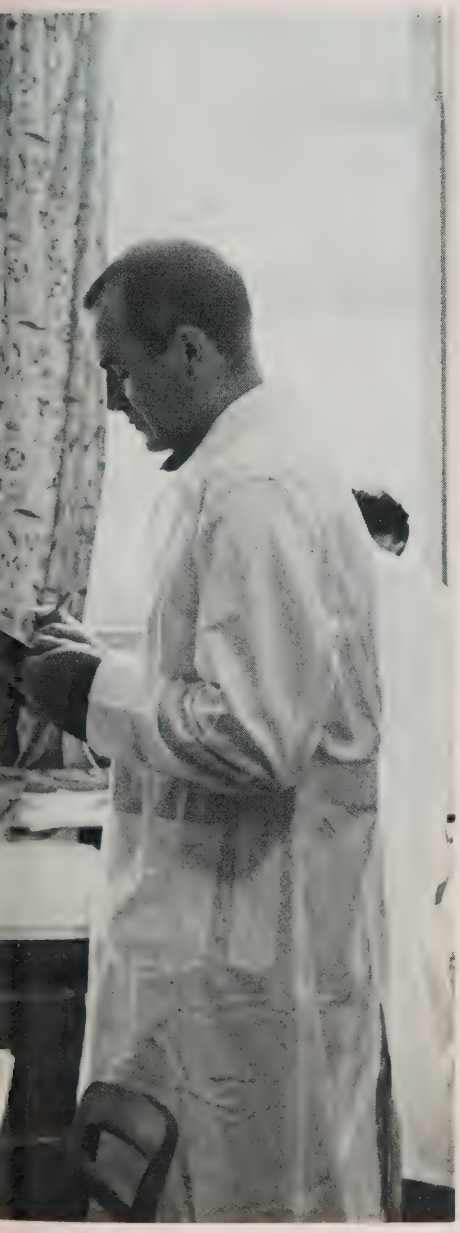
How would it be possible to watch, over a period of time, the action of the blood in the coronary arteries?

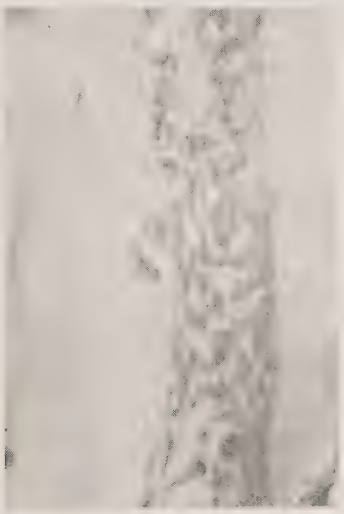
At this point a happy coincidence occurred. Wallace J. Baxter, Ontario Hydro's transmission engineer and a patient of Dr. Mustard, happened to be talking with several of the Sunnybrook doctors one morning.

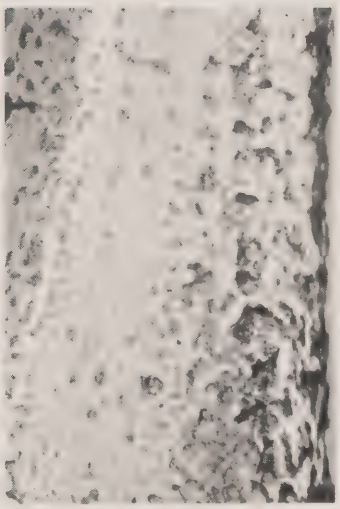
It was a conversation that led to some fascinating and rewarding research—research that brought the medical and hydraulic researchers together in a project that has helped further the study of atherosclerosis. ■

*(Part 2: An unusual study is undertaken.)*









*Dr. J. Fraser Mustard (left) heads the Sunnybrook Hospital Research team which has been carrying out the significant study mentioned in the article. Engineer Don Harkness and Technician Rex Griffeth (in photo at top) were among Ontario Hydro hydraulics personnel who assisted in project. Medical photos (above) show similarity in the pattern of atherosclerosis in actual blood vessel (left) and in plexiglass model (right), made for study by hydraulics personnel.*

# DO IT YOURSEL

WOULD the loss of its largest power or commercial customer come as bad news to an electric utility? Would it be disturbed if a new shopping centre, industry or school announced that it would not need electric service at all?

Any utility manager would have to admit concern about such an eventuality, but he would likely want to know just how any modern building or plant could get along without electric power delivered by its local utility. And, on the basis of past experience, that manager would likely consider the questions largely whimsical and completely hypothetical.

Yet, if the latest joint promotional effort of several United States' gas companies bears fruit, Ontario municipal electrical utilities and Ontario Hydro may have to face a future in which industrial and commercial customers may elect to dispense with electrical utility services entirely.

It is a competitive threat that could mean the loss of these customers even for lighting purposes. Impossible? Not at all.

Only a year and a half ago, several hundred electrical utility and industrial customers gathered at Schenectady, New York, to witness in operation the United States' first gas-turbine package power plant.

Designed to provide a low-cost, remote-controlled unattended power source, the 11,250-kilowatt unit was one of four built for the South Carolina Electric and Gas Company. Each was 80 feet long, 22 feet wide and 16 feet high—a compact high-powered package.

For an electrical utility, the comparatively tiny plant offered some bonus advantages. For one thing, the package contained power unit, generator unit and switchgear, all mounted on a simple foundation. The unit was completely self-cooled, eliminating the need for any external cooling water supply. Biggest advantage of all was the economic factor. Cost of the little plant was 95 per cent for equipment, only five per cent for installation.

But today, after only a year and a half, the idea of the small gas-powered thermal-electric plant has begun to assume ogre proportions for some U.S. electrical utilities. The gas-powered turbine is beginning to turn up in the basements of new schools, business buildings and shopping centres, as part of the gas industry's latest promotion campaign—a program which offers a builder an all-gas installation that will not only heat and air condition the building, but supply all its electrical requirements as well.

In Hartford, Connecticut, such an installation is being used in a new downtown showplace—a redevelopment which will be called Constitution Plaza. In Little Rock, Arkansas, the new Park Plaza shopping centre will be similarly equipped, and, in Glen Ellyn, Illinois, the Illinois Gas Company plans a new head office building that will be all gas, for heating, air conditioning, and to operate a central electrical system.

Electrical World, a top industry trade publication in the United States, calls the installation "do it yourself electricity," an apt title certainly when it is remembered that, in the U.S. centres where such installations are beginning to appear, electrical utilities are losing customers.

The Electrical World, in all honesty, declines to call "do it yourself electricity" a trend. It points out that, as yet, there are only a handful of such installations built or in the planning stages.

The fact remains, however, that such plants are being built and operated. There is no electric utility service required. Gas-fired turbines or engines power generation for all electric needs, while their waste heat is utilized for heating and air conditioning.

Electrical World puts it this way:

"The gas companies are poised for an all-out assault to ban the electric line completely from many new commercial establishments. Thus they seek to turn the tables on the electric industry, which is trying—but not hard enough—to achieve just the opposite result."

Too little information is available yet concerning the operating and maintenance costs of a gas-turbine package installation. But the American Gas Association is pointing with pride to one study carried out recently by a Houston, Texas, engineering and architectural firm.

This company says that "a 2,300-student, air conditioned compact school, with natural gas as its only source of power, can be built for about $2.3 million—about 16 per cent less than the present conventional type of the same size without air conditioning."

The study also asserts that operating costs of the new school would be about 16 per cent less than for




*Central generating stations, transmission lines and distribution plant are eliminated under this concept*

# LECTRICITY

*by Gary Smith*

the same modern school using purchased power. (The study, of course, is based on gas and electricity rates in the Houston area.)

But the gas-fired turbine is not the only trick which the American gas companies have up their corporate sleeves. In recent months there has been considerable publicity about something called a fuel cell.

Some of the stories have idealized this device as a "small black box under the kitchen sink" which operates quietly while producing all the electricity needed to operate a modern home.

The principle of the fuel cell is—in very simple terms—a method of producing electricity chemically. In the gas-powered fuel cell, heat produces electricity directly, eliminating the normal intermediate steps of raising steam to drive the turbine-generator.

The truth is that the gas-powered fuel cell is still very much in the development stage. But the idea is theoretically sound, and research has indicated that it can be made to work.

For Ontario's municipal utilities, the gas-turbine package idea still remains only as a possible threat to future loads. But if its promoters prove that it can compete with utility-delivered electricity on a cost basis, there is every reason to believe it will make its appearance here, sooner or later.

The dangers inherent in such a program are obvious. Our utilities have invested heavily in distribution systems, in ancillary equipment, in property, and in the training and development of employees to maintain a high quality electric service.

If loads are not maintained to make the fullest use of plant investment there can be only one result. Gradual increases in rates to all customers will have to be made, and a worsening competitive situation will result. Hydro's basic purpose and tradition of providing power at rates which can not be bettered would indeed be in jeopardy.

As Electrical World remarks to its U.S. readers: "The day of the all-electric shopping centre, school, hospital, office building and apartment house was practically upon us—we thought. It may come as a shock to think we may lose the concept of the single-energy supply to the competition before we got full possession of it."

Referring to gas company promotion in the States, it adds: "It is not too early to find out what they are up to. And it's not too early to plan aggressive reaction against such bold counterattacks."

By the same token, it is not too early for Ontario's municipal utilities to recognize that the natural gas industry's vigorous competition is likely to continue, and that the electrical utilities have no monopoly on the research and development of new equipment and better methods. ■

# PORTABLE TOWER SPEEDS SURVEYS

Ever on the lookout for ways and means to increase accuracy and efficiency, cost-conscious Ontario Hydro surveyors have come up with a new device which constitutes a significant advance in the technique of large-scale surveying.

The new development is a collapsible aluminum-alloy tower intended to increase the range of clear line-of-sight in hilly or wooded country, and eliminate the need for building the time-consuming and costly scaffolds and platforms previously used in this type of terrain. The portable tower was designed by the manufacturer, John Millard Electric Limited, in co-operation with the Survey Department of Ontario Hydro.

Triangular in shape, the new tower is assembled from 10-foot sections with standardized and interchangeable parts so that heights from 10 to 60 feet can be achieved. On the job, it is often desirable to erect two towers of various height combinations, such as 20 feet and 40 feet, and this can be done from the same structural parts as would be required to assemble a single, 60-foot structure.

A vibration-free inner tower provides a suitable base for optical instruments. One 10-foot section, combining inner and outer tower components, weighs only 55 pounds and can be slung underneath a helicopter or carried in a Beaver or other comparable aircraft.

Ontario Hydro surveyors have moved completely assembled, 30-foot towers to the site, suspended upright beneath helicopters. The tower is mounted on base plates which are adjustable for variations in the slope or elevation of the ground.

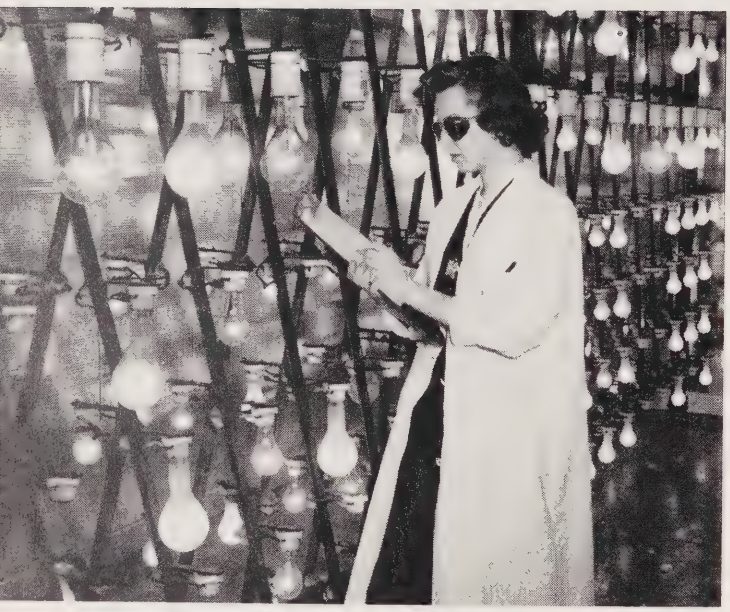
The aluminum sections purchased by Ontario Hydro, totalling 60 feet in length, have been used in conjunction with survey equipment on the Mattagami River surveys and on transmission line surveys in Northern Ontario. It is expected that the tower will also be used along the route of the Commission's new extra-high-voltage transmission line in the north.

The tower is expected to win wide favor, and has already been used by the Federal and various provincial governments. ■

*This collapsible aluminum tower is ma*
*a significant contribution to l*
*scale surveys across Canada. Sixty*
*tower weighs a total of 330 pou*



# A LIGHT WINKS OUT



*In their heyday, as many as 1,500,000 Hydro lamps were purchased annually. Constantly checked against Commission specifications, they are shown undergoing the life test.*



*Light output was another vital consideration and this was checked with the equipment shown. Long-life lamps were an early Hydro contribution to better electrical living.*

THE once-popular "Hydro lamp" has come to the end of a brilliant life—snuffed out by changing buying habits and new lighting methods.

Ontario Hydro has decided to discontinue the sale of long-life lamps after December 31 of this year.

It was back in the 1920's that Ontario Hydro researchers, confident that they could contribute substantially to better electrical living, designed an incandescent-type lamp with a life of 1,500 hours—twice the durability of those normally available at that time.

Because of their longer life and the name brand "Hydro", the lamps were in brisk demand, particularly by utilities with Hydro shops. In addition, volume was such as to permit their sale at attractive discounts. And until the early 1940's the Commission used lamp salesmen to merchandise and service these sales.

The lamps also received wide acceptance by municipalities who used them for street lighting.

In those days people still walked or drove to their utility office and paid their electric bill with cash. On their way out of the building they would stop in at the Hydro shop and pick up a couple of bulbs.

Then came the chainstore and the supermarket, where people were able to purchase many of their household needs, including lamps, under one roof. At the same time, cheques became the popular methods of paying bills, and customers were able to settle their Hydro and telephone accounts at banks when making deposits. Many dropped the monthly trip to the utility office.

And lamp manufacturers began developing other methods of lighting.

In office buildings, the trend was to fluorescent fixtures, not included in the Hydro line. Municipalities turned to mercury vapor and fluorescent lamps for street lighting.

When the road campaigns were dropped and Ontario Hydro confined its sales to staff members and utilities, on request, sales dropped considerably and were scarcely large enough to offset internal costs.

Just recently, the firm which manufactured the lamps informed the utilities that it could supply their requirements at the same price it charges Ontario Hydro for quantity buying. It meant that if the Commission was to continue to recover its testing and handling charges, its prices to the utilities and staff would have to be higher than those prevailing elsewhere.

And so, after more than 30 years, the sale of Hydro lamps is being discontinued—a concession to the changing times. ■

# ELECTRICITY—
## a star performer

THE Ontario Hydro exhibit was a leading attraction again this year at the C.N.E. And crowds, numbering in the hundreds of thousands, toured the Toronto Hydro displays. In the Toronto Hydro building they were treated to cooking demonstrations with small appliances. Details of the utility's wiring and appliance finance plan also aroused much interest. Center of attraction in the Ontario Hydro exhibit was the all-electric home-in-the-round. Other highlights included models of Douglas Point and Lakeview, and a display on the theme "People Behind the Switch."




*Home-economists show how to cook with small appliances at Toronto Hydro display.*



*Three times an hour, throngs toured Ontario Hydro's all-electric home-in-the-round. Interest in the kitchen is shown by these ladies.*




*Thousands watched the production of television shows through the glass walls of this studio set up in the Arcade of Light outside the Electical Building. It was a co-operative effort by Ontario Hydro, the electronics industry and station CFTO-TV.*

# FOLLOWING THROUGH



**by Joan Allen** **illustrations by John Elphick**

PROOF of the pudding, they say, lies in the eating rather than in the baking. Likewise, the value of a domestic customer survey stems more from the use made of the collected information than from the fact that the survey was conducted.

It is true, of course, that utilities become better acquainted with their customers while the survey is being carried out. And customers do appreciate the opportunity to comment on the service they receive from their utilities. But, while these functions are undoubtedly of very real value, even greater benefits in the form of effective load-building programs and improved customer relations can be derived from the tabulated results of appliances in use, adequacy of wiring, and other related matters.

Immediate follow-up of specific customer complaints is a step in this direction. Many utilities are already undertaking this type of program. The per-



sonal attention a utility pays to its customers' service problems, and any action the utility can take to solve these problems, will pay off in terms of happier, more satisfied customers.

Ottawa Hydro is a case in point. This utility has assigned customer relations officer Charles Fife to carry out its follow-up program. He is checking every complaint made by Ottawa Hydro's customers either on the utility's own survey questionnaire, or on Ontario Hydro's.

"It's an ideal way to get close to our customers," Mr. Fife feels. "I telephone the customer who complained, and make an appointment to see him in his own home at his convenience. It's not always possible to take action, of course, but the customer at least hears the utility's explanation. And the customer appreciates the opportunity to have his questions answered."





Follow-up of water heater complaints has resulted in a satisfying number of sales for many utilities. Ottawa Hydro initiated its water heater rental and sales program in April of this year, and by the end of July had sold 270 units. More than 30 of those sales were made to customers who had complained of inadequate hot water on survey questionnaires.

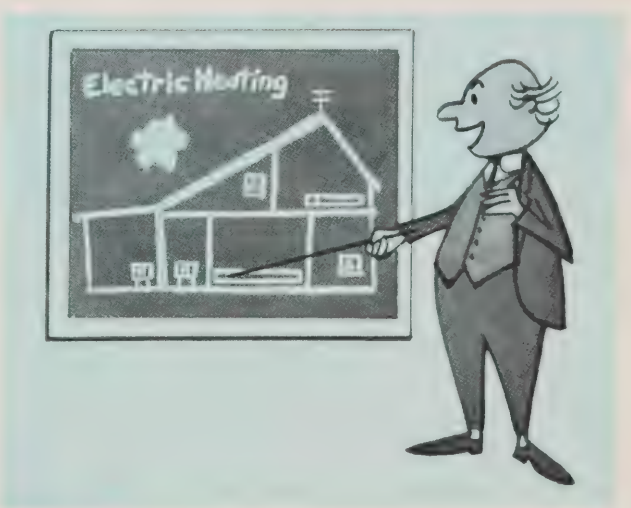
Hearst and Fergus P.U.C.s are among those utilities which have launched full-scale water heater programs based on the results of their appliance saturation surveys. A low saturation in electric dryers has also prompted Fergus P.U.C. to lay plans for a dryer program in the fall, tying in with Ontario Hydro's province-wide dryer promotion.

Sometimes the customers' complaints deal with matters outside the utility's jurisdiction. In the spirit of community service, the utility can refer these comments and complaints to the appropriate authorities.

In Owen Sound, for example, the P.U.C.'s survey turned up several complaints about inadequate street lighting. Unable to take any action on its own, Owen Sound P.U.C. helped convince the city council to approve a new street lighting program.

Listowel P.U.C.'s appliance survey revealed that many of its customers were also concerned about street lighting. Only 63 per cent said they were satisfied with the street lighting in their own areas. The P.U.C. has turned the matter over to Listowel town council's Fire, Water and Light Committee for consideration.

About 150 Listowel P.U.C. customers indicated an interest in electrical heating on their survey questionnaires. To provide these people with the information they want, the Listowel utility is planning an electric



heating forum in the early fall. A representative of Ontario Hydro will be invited to discuss electric home heating.

A program to encourage safe, adequate wiring can also be based on information obtained through customer surveys. Many utilities found a number of two-wire 110-volt services and inadequate "housepower" which could not accommodate all major appliances.

With this type of adequate wiring program in mind, Port Elgin Hydro included the question,






"Would you like your home inspected for hazardous wiring?" in its customer survey. Approximately one-third, or about 200, said yes.

E. M. Hammond, manager of Port Elgin Hydro, reports that the Ontario Hydro electrical inspector who visited each of their homes, found very little wrong with the wiring from the safety point of view. "In most cases," Mr. Hammond says, "the only hazards were misuse of fuses and homemade extension cord wiring.

"What we are most tickled about is that we found two-wire services in about 100 homes, and that about 10 of these have already changed to three-wire service," Mr. Hammond says. "As a result, we are now financing people changing from two to three-wire service. They can repay accounts up to $100 in installments on their hydro bills."

Appliance saturation surveys may also provide market information and comments about repair services which can be passed on to appliance dealers, distributers and manufacturers.

All aspects of load building based on the results of customer surveys can be tailored to each individual municipality. Utilities can develop promotional programs most appropriate to their own communities.

The combined results of customer surveys carried out by individual utilities and Ontario Hydro's appliance saturation survey will focus provincial and municipal attention on the best possible areas for single-appliance promotions by the entire electrical industry. The first one—Operation Eskimo, which featured freezers and refrigerator-freezers—has already proved the effectiveness of single-appliance promotions. A similar dryer campaign known as "Sunshine Special" is planned for this fall.

Repeated saturation surveys by Ontario Hydro and the utilities, supplemented by other studies of such things as appliance use characteristics and group diversity now being carried out by the Association of Municipal Electrical Utilities Load Study group, will become a very significant factor in indicating where, why and how many appliances are being used in Ontario. They will also show the basic characteristics of the customers and households using these appliances.

This information is being used to assist in forecasting loads in the province and in the municipalities, to supplement the methods which have been used in the past. It will be useful for forecasting both the magnitude of the loads and the load pattern.

Useful as appliance saturation surveys are, they can't solve everybody's problems.

There is one case on record where a utility customer had been complaining for years about his particular problem to various municipal departments—without any results. His utility's appliance saturation questionnaire offered a new medium for his complaints.

In the "comments" section this customer wrote: "Why doesn't Hydro fix the potholes in the road in front of my house?" ■



*A controlled blast of 15,000 pounds of high explosive produced this dramatic scene. The big explosion removed a rock plug which kept the tailrace areas dry during construction of Otter Rapids G.S.*

# BIG BOOM ON THE ABITIBI

Two of the most exciting exploits in the saga of construction at Otter Rapids were carried out successfully during the month of August.

The first, depicted in the dramatic photograph, involved blasting a rock plug which had been left to hold the river back from the powerhouse in the tail race area. A carefully controlled blast of 15,000 pounds of high explosive was used to shatter the rock plug, located just 500 feet down stream from the powerhouse. The explosion reduced the 9,000 cubic yards of granite rock to well-fragmented muck, a portion of which will be scraped into a deep hole in the river bed.

Later in the month, the last of the four diversion ports was closed and the river immediately began to rise. Within a matter of hours the upstream level had risen some 60 feet, and the headpond stretched as far as the eye could see. Further flooding will be much slower, as the water will be allowed to spill through the sluiceway, but the level of "Otter Lake" will continue to rise another 30 feet. By then, the headpond will reach 23 miles upstream to the Abitibi Canyon Generating Station.

Power from the first unit was produced late in September. The second unit will also commence operation this year, and two more will be brought into service in 1963. Otter Rapids G.S. could become the largest hydro-electric development in Northern Ontario, as provision has been made for the installation of four additional units—as and when required. ■

# VOLTAGES AND THE FUTURE

**Toronto Hydro's general manager advocates step-up as a long-range program for utilities**

by Harry Hyde*

Although utilization voltages approximately double ours are in common use throughout the world, it is doubtful if the move to increase utilization voltage in Canada and the U.S.A. would have been seriously considered if it had not been for the phenomenal load growth of the last 10 years, as well as the predictions that this trend will continue. There are indications that our loads in 25 years will be 5 to 10 times those of today.

To some this may sound over-optimistic, but the five-fold increase, which seems like a tremendous growth, is only an increase of 6.7 per cent per year; and this is not much greater than the long-term rate of growth throughout Canada for the last 35 to 40 years. Thus, depending on what specific conditions exist in each locality, a utility must look at today's load as being about one-quarter, or one-fifth, or one-tenth of what the load will be in 25 years' time.

While it is true that much of the load growth is a result of the tremendous building boom and population increase which we are experiencing, it is equally true that established communities have also shown considerable load growth. This has, in turn, resulted in increased load density and load factor. It is this increase in load density that presents the real problem, and not geographical expansion.

Now where is all this load coming from? We know that industry and commercial enterprise is growing and that they use more and more electrical equipment, and less and less labor. But something of which we are seldom aware is the fact that the home is taking its proper share in the growth.

To bear this out, and to show that this is not confined to large centres, I would like to quote from a recent study made of average domestic consumption of 289 Ontario municipal utilities over the past 20 years. In 1940, the average monthly consumption per customer ranged from a maximum of almost 450 kilowatt-hours in one municipality to a minimum of 26. In 164 of the 289 municipalities, the average was under 100 kilowatt-hours, and mostly well under 100.

By contrast, in 1960 only one of the municipalities had an average below 100 kilowatt-hours per month. The maximum had risen to almost 670, and only 8 of the 289 municipalities had averages under 200 kilowatt-hours. Indeed, in 148 municipalities, the average was over 400, and 100 of these had exceeded the highest municipality in 1940.

Turning to the rate of increase in average domestic consumption per customer over the entire 20 years, we find that, in 175 of the 289 municipalities, it was equal or better than 6.5 per cent per annum. In fact, only 36 of the municipalities had a rate of growth of less than 5 per cent per annum.

A home which 10 years ago had a demand of 2 or 3 kilowatts, today has a demand of 3 to 5 kilowatts. What we are looking forward to is something in the

order of 10 to 20 kilowatts. Whether it is 10 or 20 kilowatts, we are going to have something which will create problems in the home.

I would now like to touch on another facet of this problem of load growth for residential areas. Some years ago, load growth meant an increase in the wattage of lamps, the addition of a few small appliances, the increase in the rating of a stove, the addition of a relatively low-wattage water heater, etc.

Today's load growth is of an entirely different nature. If you look in the average home today and compare it with the home of 25 years ago, you will, no doubt, be surprised at the great number of small motors in it. The home of today is not like the residential consumer's of 25 years ago. He is now motorized and, in fact, has become a small power customer.

Development may continue in the same way as in the home laundry, where a one-quarter horse power washing machine motor has been replaced by automatic equipment which, with the dryer, has a capacity of from 4 to 8 kilowatts.

Electric space heating in the home is another large load-builder which is gaining momentum in the U.S.A. and, undoubtedly, will soon become important in Canada.

The air conditioning load in residential districts is also with us. Although only recently introduced, the latter has already presented some problems because of the relatively large starting currents of some of the equipment sold.

How will we solve the problem in the home where the increased use of electricity will make the residential consumer's wiring system, especially at the service entrance, totally inadequate? It is obvious that if still higher loads are to be used in the home, then something has to be done there too. Already the 60-amp service is considered too small, and many authorities now require a 100-amp service. That means that a 200-amp or larger service will be required in 15 to 20 years, if we continue with the present utilization voltage. This will also involve many additional and, possibly, larger circuits in the home. The end result will be a small copper mine in each home.

One of the solutions is, of course, to double the existing voltage in the home from 120/240 to 240/480 volts and, if a 3-phase voltage is desirable, to 240/416 or 250/432 volts. As stated earlier, this is the normal utilization voltage throughout the world, outside of North America and parts of South America. In industry, we already use such voltage as 440 or 550; and in the U.S.A., 460 to 480-volt networks are being developed for large buildings, as well as for general supply to commercial areas.

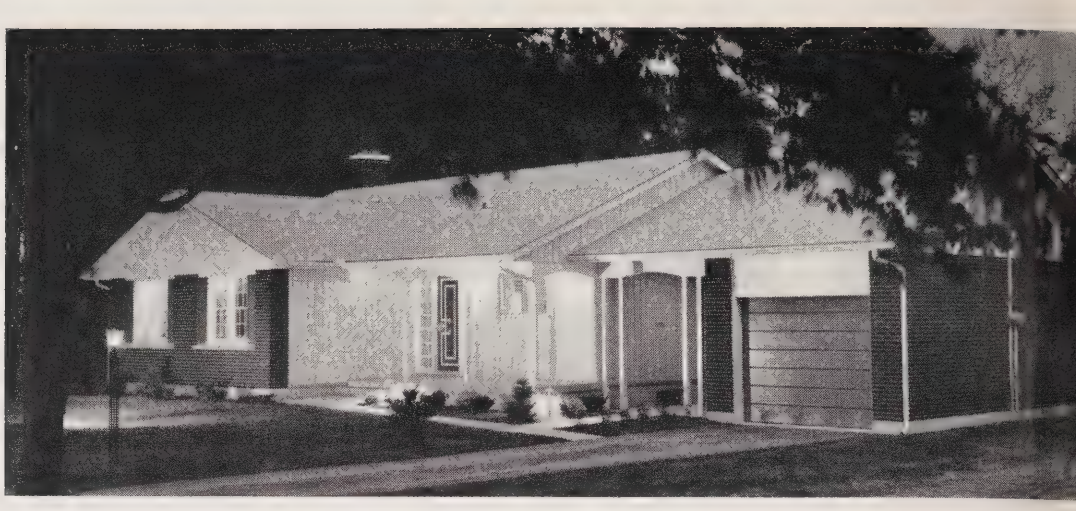
In making the suggestion that we use higher voltage, I also want to emphasize that I am *not* saying we should do it today. Far from it! I suggest that the

*Domestic load growth in recent years reflects use of many appliances unheard of 15 years ago.*









whole problem of higher utilization voltage be examined as a long range rather than as an immediate problem.

We must keep in mind that, by proper planning and proper design today, we might be able to save a lot tomorrow. Therefore, it is imperative that steps be taken now for a joint agreement and effort between utilities, manufacturers, inspection authorities, and all regulating bodies, to initiate today those standards and practices which will result in most homes and appliances being ready for the higher voltage at some future date.

All electrical utilities are anxious to keep costs down, such as by increasing voltage levels. Already considerable inroads on electrical loads are being made by other sources of energy, notably, natural gas, and it should be remembered that a kilowatt of electricity less means a kilowatt of generating and distribution equipment less, a kilowatt of apparatus less, a kilowatt of appliances less, and so on.

Let us now examine the proposal and deal first with the question of safety. Much has been said and written on the relative safety of the two voltages, and, after some study, all I can say is that there is a wide range of opinion even among the experts. There is no denying the fact that greater precautions must be taken when the higher voltage is used. But, by the same token, this may eliminate the many hazards which are now commonplace and well known to most just because of the haphazard approach we have to the lower voltage!

Engineers from countries who operate the higher voltage do not consider it a greater hazard. In fact, two engineers from Australia who went to Washington to compare their record with that in the U.S.A., told me that their record was better, and attributed it to the greater care taken there to ensure against hazards with the higher voltage.

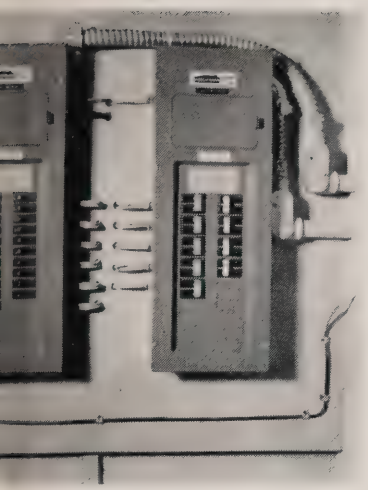
I would also like to quote from a paper given by A. S. Anderson on October 24, 1960, in Austin, Texas:

"The use of electricity in the home does not presently represent a great hazard, nor will the doubling of the voltage-to-ground necessarily increase it. According to one record by the Metropolitan Life Insurance Company, the death rate per 100,000 in the home due to accident is about 7, of which less than 0.1 per 100,000 is due to electricity and somewhat greater than 0.1 per thousand is from drowning. . . .

"Most of the electrical accidents in the home occur when one part of the body makes contact with an energized wire or metallic surface and another part of the body is in contact with 'ground'. This type of contact can be reduced to almost the vanishing point by grounding the metallic body of the tool or appliance or by a 'double' insulation. Whatever is done to reduce these contacts will cost the same at either 120-volt or 240-volts-to-ground and be much more effective than keeping the voltage at its present level of 120 volts."

I can, therefore, only conclude that service at the higher utilization voltages can be made safe, if wiring, accessories, appliances and utilization equipment are designed for the higher voltage, and provisions for grounding and other safety features are incorporated in the wiring system. I might also add that recent revisions of the electrical Code already proposed, and some even implemented, will ultimately facilitate the use of higher voltage in domestic supply.

Safe and suitable appliances for this higher voltage are also available, and are being manufactured here for export to those many countries where this higher



*Medallion, all-electric home, while the best value money can buy, is also a champion load builder. Service panels like those shown are heart of the Medallion Home.*

utilization voltage is, in fact, the normal low voltage.

The major question then is not whether a safe installation can be made on a new building, but rather what is involved in rewiring existing buildings; whether the appliances for the higher voltage will cost more or be as efficient; and whether the public can be educated to handle the higher voltage with the proper care. Here, again, my remarks will be based on the long-term view.

First, let us consider the adequacy and safety of the wiring of the existing homes. On this, the experts do agree: that only about 12 to 15 per cent fulfill the required standards, and that from 80 to 85 per cent of our homes need something more radical than just minor changes to bring them up to standard in adequacy and safety for modern electrical living. And I might add that nothing discourages the extension of the use of electricity as much as the lack of adequate wiring.

This means that most of today's homes must be rewired in the near future, and if steps are taken to prepare for possible changeover to higher utilization voltage, in say 15 years from now, then the ultimate cost of changeover to the higher voltages, at the consumers' end, would be relatively low. In other words, if the load grows as expected, and if the rewiring program is carried out as anticipated, then most of the existing buildings and all new construction will, by the end of 15 to 20 years, be capable of taking on the higher voltage.

Most of the existing wiring is good for 300-volts-to-ground, and the individual 110/120-volt circuits could be used at 240 volts. Existing outlets are not satisfactory for this voltage, but if replaced in the course of rewiring, the difference in cost between a 120-volt and 240-volt outlet is very little. However, if

# HIGHLIGHTS

FORECAST of a five-fold increase in load densities in our residential areas in the next 25 years is indicated. The necessity for a radical revision of our distribution systems at the low voltage level and in the home may be solved by doubling our utilization voltage.

There can be no question that service at the higher utilization voltage can be made safe, and even safer than the present domestic voltage levels, if wiring, accessories, appliances and utilization equipment are designed for the higher voltage, and provisions for grounding and other safety features are incorporated in the wiring system.

The question therefore resolves itself purely into one of economics, and, if the changeover were to be carried out now, the possible savings at the distribution levels would be small in relation to the cost at the consumers' end.

However, if steps are taken now to prepare for possible changeover to higher utilization voltages in say 15 years from now, then the cost at the consumers' end would be relatively low.

It would seem that, from the utilities' point of view, the 240 or 250-volts-to-ground is the most desirable, because it will permit the use of existing distribution transformers. I do not favour auto-transformers, but would consider them in cases where costs for rewiring would be excessive.



*Aesthetics must be considered and higher voltages will facilitate economic underground distribution.*

it were to be done just to convert to a higher voltage, then the labor and repair costs would be appreciable.

This is one of the main reasons for proposing a long-term plan.

Appliances, too, can be arranged easily for operation at either 120 or 240 volts by means of a parallel or series connection.

Years ago most fractional horsepower motors were made with three terminals so they could be operated at 120 or 240 volts. In fact, many of the larger appliances should be connected for 240-volt operation. The appliances could be designed so that, with a screw-driver or a pair of pliers, they could be made operable at either one voltage or the other by reconnection at some easily accessible point.

Another method of dealing with the problem of appliances in homes now wired for 120/240 volts, which has wide acceptance in the U.S.A., is to convert all major fixed appliances for 240-volt operation, and install an auto-transformer to provide a 120-volt supply to all lighting and convenience outlet circuits. This is considered safer because all portable appliances, as well as floor and table lamps, will be operated at 120 volts. This method also permits conversion at any time and in any area which a utility considers desirable to change to a higher voltage. In this way, occupants could move to areas which are still operating on the lower voltage and use their appliances. However, this could also be done with the dual-voltage appliance suggested earlier, which would also be less expensive.

This, then, brings us to the next consideration, which is that of economic studies. Here, again, many papers and briefs have been written, and there is a great divergence of opinion among the experts. I think that I can say, at this time, that the opinions of those who were opposed to higher utilization voltage on economic grounds, while not completely changed, are gravitating closer to the opinions of those who feel that much can be gained by this proposal. From the meagre studies that I have personally made, it seems to me that something very definite can be gained.

I might add that the higher utilization voltage may give an added benefit to the larger urban areas where the civic pressure for underground distribution is ever present. With the double voltage, the area supplied by each transformer bank would be quadrupled, as would the transformer size. Primary feed would be simplified and, in all, a much more economical underground system could be developed than with present voltages. In fact, placing transformers underground or in kiosks might go a long way toward solving part of the problem. And since the transformer units would be relatively large, the costs would not be as great as those of today with the lower secondary voltage and more limited length of secondary mains. This might be termed a sort of by-product, but may be very important in the future.

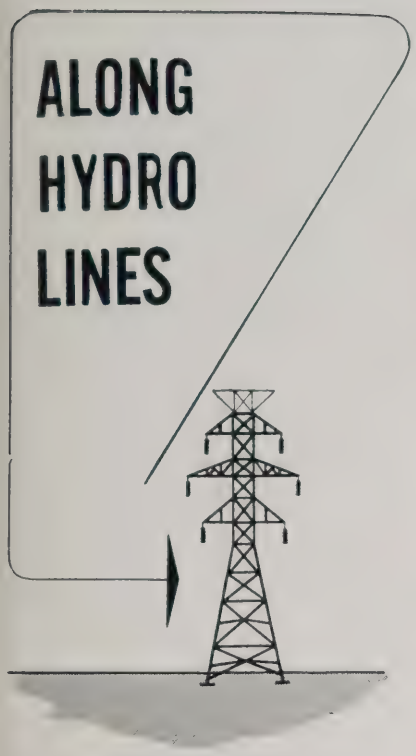
I feel that a study of the economic factors should be undertaken by a committee consisting of utilities, manufacturers, inspection authorities and other groups, which would be able to view the conditions throughout Canada, rather than those of one utility or one section of Canada. The task of organizing such a committee should be undertaken as soon as possible.

The important thing is to start attacking the problem *now*, and, after we have ironed out the difficulties of the utilities, the manufacturers and the inspectors, we continue in an energetic manner to provide for the future. If the predictions of the increase in load density in the next 25 years do not come through, then I think we have not lost too much. But if the indications we have before us today do materialize, then the savings would be appreciable. If we plan ahead, I feel that, in the next 15 years, there is much that can be done at very small expense. I am suggesting that there is expense, but that the expense would not be anything of the order that it might be if we let the thing go.

Using the traffic and highway problem as an analogy, it is possible to widen the road today, but an expressway is indicated for tomorrow, and you had better start buying the right-of-way today at reasonable prices, or pay dearly if you wait too long. ■

**(Based on paper by Mr. Hyde, general manager and chief engineer of Toronto Hydro-Electric System and immediate past president of the* A.M.E.U.*)*

# ALONG HYDRO LINES



### Central Region office ready late next year

Ontario Hydro's first electrically-heated regional office will be built on Yonge Street, about 1½ miles north of No. 401 Highway, in Willowdale. Construction of the new $750,000 Central Region headquarters will commence this month, and the building is scheduled for completion by November, 1962.

The present office on Bloor Street is inadequate for the 120-member staff, and additional facilities have been rented.

The new, two-storey office building will have a total floor space of 42,000 sq. ft. It will be the fifth regional office built by Ontario Hydro since the regions were formed in 1947, and it will be similar in design.

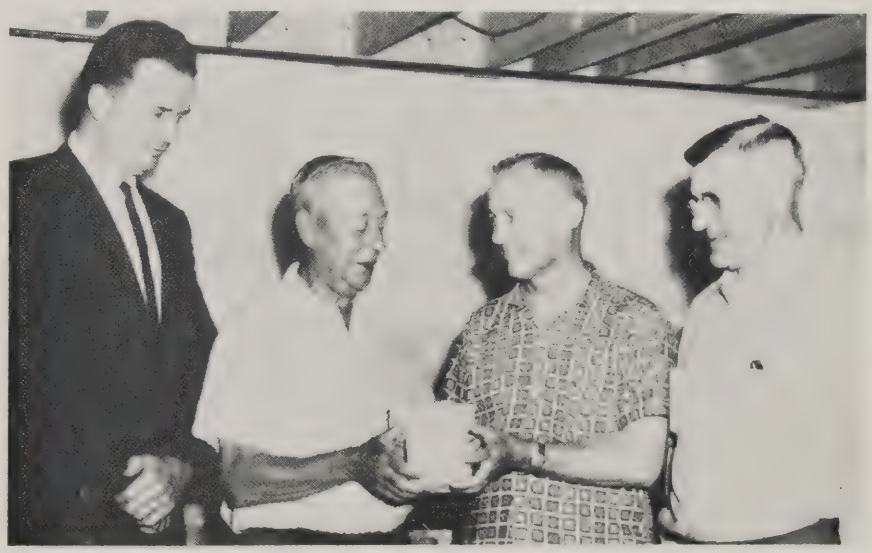
The building will be L-shaped, with a 165 ft. by 50 ft. main building and a 110 ft. by 47 ft. wing. Of steel frame construction with pre-cast concrete floor slabs, it will have a brick masonry exterior.

The new location will be more central to rural areas and municipalities, and it will provide parking space for 125 cars.



### Hydro Superintendent Retires

THE CAYUGA HYDRO-ELECTRIC SYSTEM is 37 years old, and Joseph Blower has been its superintendent for all of that time. Now retiring, he was instrumental in developing Cayuga Hydro into the efficient and debt-free system it is today. He is shown above, right, with Clare Kimball, his successor. Mr. Kimball was with the Simcoe P.U.C. before joining Ontario Hydro's Cayuga R.O.A. in 1955. ■



### Honored for Long Service

HARRY BURTON, general superintendent of the Ingersoll Public Utilities Commission, was honored recently on the occasion of his 40th anniversary with the utility. During his term with Ingersoll Hydro he has served under four managers: Harold Hall, E. A. Washburn, D. M. Seath and C. V. MacLachlan. Shown in the photograph, at the presentation, left to right, are: D. M. Seath, manager, Stratford P.U.C.; Mr. Burton; Earl Thornton, office manager, and Fred Vyse, Wingham P.U.C. foreman. *—(photograph courtesy Sentinel-Review)* ■

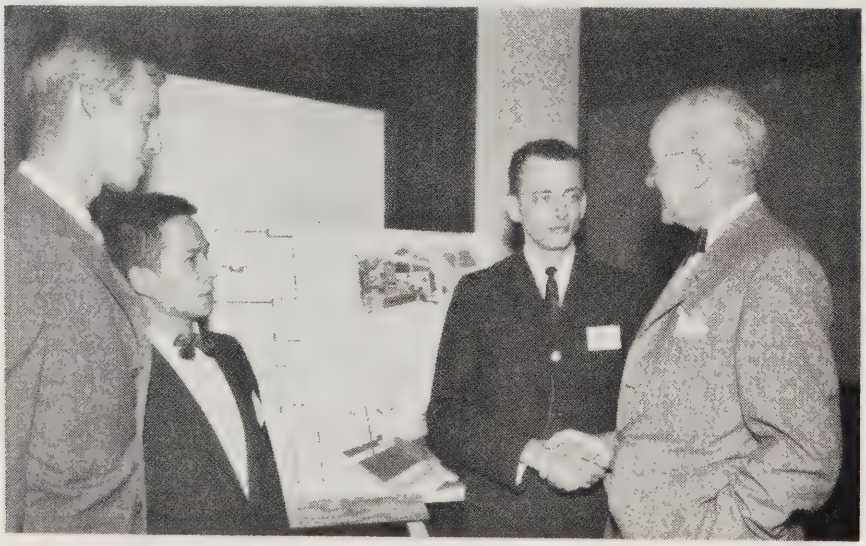
# municipal briefs

**Racing fans** and spectators at London's Western Fair will be able to view the proceedings in comfort regardless of the weather—thanks to electric heating. The fair board is installing electric infra red radiant heating units and closing in both ends of the grandstand with glass. Thought to be the only one of its kind in Canada, the $30,000 heating installation will consist of 200 units suspended from the ceiling of the grandstand. The heating will provide warmth for about 4,200 persons.

**Waterloo** hockey spectators will bask in the reflected comfort of similar infra-red heating units during the coming winter. The units will be suspended from the arena ceiling on both sides of the ice surface. In announcing the decision to heat the arena, Arthur Walters of the Waterloo Arena Commission, said that many people had been staying away in the winter because of the cold building. He said the units would be "aimed" at the people, leaving the ice surface free of overhead heat.

**Ottawa Hydro,** in conjunction with the Board of Control, has drawn up a five-year plan to finance a major underground distribution program in the downtown area. It is contingent upon the Federal government's willingness to assume half the cost. The plan provides that the city and Ottawa Hydro each contribute $500,000 a year over the next five years into a special underground fund. Under the proposed cost-sharing arrangement, the federal government would be asked to match these contributions—an estimated $5,000,000—on the grounds that the program will enhance the appearance of the national capital. Details of the underground program would be worked out between the city and the utility, in consultation with the National Capital Commission.

**Fluorescent** or mercury vapor? —it seems to be a matter of opinion where street lighting is concerned. In Woodstock, where a $50,000 street lighting program is planned, three fluorescent and three mercury vapor lights have been installed on a downtown street and the public has been asked to express its preference. The majority of merchants seem to favor fluorescent. And the Village of Mildmay has requested the local utility to install new fluorescent fixtures along the length of the main street. On the other hand, mercury-vapor lamps won out in Woodbridge, where a complete new lighting system was recently installed. Ottawa Hydro has recommended that existing incandescent lights be retained in residential areas and mercury vapor be used



*Chairman W. Ross Strike congratulates winners of all-electric home design contest. From left are: D. G. Hallford, 3rd; John Ma, 2nd; and L. W. Coombe, 1st.*

**Hydro announces winners of home design contest**

Top honors and awards totalling $3,500 went to three Toronto architects in Ontario Hydro's design competition for all-electric homes. Prizes were presented by Ontario Hydro Chairman W. Ross Strike at a special awards dinner.

Lawrence W. Coombe won $2,000 for first place, John Ma $1,000 for second, and Donald G. Hallford $500 for third in the province-wide competition.

Special mention and $100 prizes were awarded to Richard Y. Lee, Harry L. King and George J. Yamazaki. All six winners were members of the Architectural Institute of Canada.

Endorsed by the Ontario Association of Architects, the competition was open to all members of the Association practising in Ontario, and attracted registration from 83 architects throughout the province.

Objective of the competition was the design of homes created specifically for total electric living in Ontario. All designs met the electrical industry's Gold Medallion standards, including electric heating.

The winning designs were on display in the Hydro Building at the 1961 Canadian National Exhibition. ■

on the city's major thoroughfares.

**Toronto Hydro** commissioners appeared in person before the Board of Control to present the 50th annual report. Stressing the favorable rates enjoyed by the people of Toronto as the result of public ownership, Chairman Bertram Merson pointed out that the average prevailing rates are slightly below those of 1937, and that no increase was anticipated. He said that energy sales totalled $37.5 million in 1960, a saving of over $75 million a year, or more than $100 per year per citizen compared to the rates charged by some private utilities.

**Ingersoll P.U.C.** has moved into spacious new quarters on the corner of Bell and Wonham Streets after forty years in the former downtown location. The building is on a two-acre site and includes general and private offices, stockrooms, a meter shop and a garage. Ample parking facilities are provided for customers and staff.

**Galt P.U.C.,** borrowing a page from standard bank practices, has installed a special depository outside the door of the Hydro building where customers can pay their power and water bills after the offices are closed.

**J. Stewart Killingsworth** has been appointed to the London P.U.C. to fill the vacancy created by the resignation of J. E. Williams. Mr. Killingsworth had previously served on both city council and the local commission before retiring last year because of ill health.

**Rate adjustments** designed to decrease their revenue have recently been announced by the Hydro utilities of Ailsa Craig, Sandwich West, Hawkesbury and West Lorne. Hastings Hydro will increase its charge for minimum bills, effective October 1, from $1.11 gross per month to $2.22 per month. More than 25 per cent of this utility's residential services are summer cottages, and these are largely responsible for a disproportionate number of minimum bills. ■

### A. Screaton Heads accountants

A Screaton, C.P.A., R.I.A., Chief Accountant of the Toronto Hydro-Electric System, has recently been elected president of the Society of



Industrial and Cost Accountants of Ontario for the 1961-62 term.

As of April 30, 1961, there were, in Ontario, 700 registered members of the Society, 656 general members, and 2,466 students. Society chapters are located in 15 centres from Ottawa to Fort William.

During his term as president, Mr. Screaton will be addressing Ontario chapters on the theme "Flexible Budgets—The Pivot of Control."

### Value of PR underlined in Letter from London Free Press

The following is part of a letter received by R. M. Laurie, Western Regional manager, from the London Free Press. It has reference to Robert Smart, one of a small group of professionals hired by Ontario Hydro and stationed in the Regions and Head Office to keep the public informed of the aims and operations of the Commission throughout the province.

Dear Mr. Laurie:

Just while your Robert Smart is on holidays and, presumably, out of earshot, I want to take this opportunity to congratulate you on having this man on your staff.

You may or may not know that good public relations men are almost non-existent in London business and industry. The attitude that the role of the PR man is to hide or supress news of the company makes the job of the newspaper reporter very difficult, and can only work to the detriment of the firm concerned.

It is my impression that, while Bob has always been a salesman for Hydro, he has been careful never to lie nor deceive and, on many occasions, has been most helpful. Our rewrite men have several times been delightfully surprised to receive a 'phone call from Bob during or immediately after a storm, giving a complete picture of power services and breakdowns in the Western Region. These reports are usually faster than we can improvise, and I expect they are probably more accurate.

I have several times done major features on Ontario Hydro during the past two years, and on each of these occasions Bob has been most helpful in getting pictures and facts and getting them quickly. He is, of course, a fund of information himself on Hydro.

But the real purpose of this letter is to thank you for the assistance of Mr. Smart during most of my tenure on the business beat. Working with him has been a real pleasure.

Yours truly,
Chas. Whipp,
London Free Press.

### P.U.C. manager Dies at Barrie

William M. Salter, secretary and general manager of the Barrie Public Utilities Commission since 1935, died recently after a short illness.

Born at Chatham, N.B., Mr. Salter entered the employ of the Bank of Nova Scotia and served at several Maritime branches before being appointed manager at Rainy River, Ontario. He came to Barrie as treasurer of the Barrie Tanning Company and joined the P.U.C. after a five-year term in the insurance business.

Among the survivors are his widow, the former Irene Allward; a daughter, Mrs. W. Woods, Toronto; and a son, Millet Salter of Barrie.



## Mr. "Safety" Joins Contractors

Roy H. Beith, whose name has become synonymous with electrical safety throughout the province, is changing his field of endeavor.

Manager and Secretary-Treasurer of the Electrical Utilities Safety Association for almost 9 years, Mr. Beith has recently been appointed Executive Vice-President of the Electrical Contractors' Association of Ontario. He is shown, right, with H. John McDonald, president of the organization he will represent.

Commenting on his appointment, Mr. Beith said that his years of close association with the electrical utilities of Ontario would help him to develop improved liaison and co-operation between the utilities and the contractors.

### Electric heating veteran Retires at Toronto Hydro

An electric heating specialist and rate and load study expert, Morland P. Whelen, has retired after 39 years with the Toronto Hydro-Electric system.

A graduate of McGill and Toronto Universities, with an M.A.Sc. degree in electrical engineering, Mr. Whelen commenced his career with Toronto Hydro in testing and field work. He became the utility's first industrial electric heating engineer and, in the light of present-day developments, it is interesting to note some of his comments in an article "Facts About Electric Heating" which appeared in the September, 1923 issue of Electrical News.

On the subject of costs, he deduced that if the lowest residential rate of one cent per kwh then prevailing in Toronto were obtainable, the cost of residential electric



heating would be double that of coal at $15 a ton. He cautioned that the availability of off-peak power would limit the use of electric heating to 1.5 per cent of Toronto homes.

The article astutely held out better prospects for the future of electric heating when houses would be "scientifically constructed" to retain heat. "With the better planned house of the future," the article concluded, "values of unit heating capacity as low as 2 or 3 watts per 1000 cubic feet will replace the present value of 10 watts."

In 1928, Mr. Whelen was responsible for the first electrically-heated travelling bread oven installed in Canada. In more recent years, as manager of the Demand and Rates Department, he took an active part in the work of the A.M.E.U. Rates Committee.

Mr. Whelen will continue his long interest in rates, billing control, load analysis, costs and management problems with a firm of engineering consultants. ■

### Electric heating Rate reductions

Most of Ontario's municipal electrical utilities are expected to announce reductions in the minimum rate for electric heating following word from Ontario Hydro, earlier this month, that the Commission has approved a 10 per cent reduction in its minimum heating rates.

The new Ontario Hydro rate of 1.35 cents a kilowatt-hour (formerly 1.5 cents) applies to all home heating customers served by Ontario Hydro rural operating areas.

The new rates are the result of an extensive study of tests made on 300 electrically-heated homes across the province during the last heating season. These studies indicate that the relationship between peak heating load and peak system load is better than had been thought previously.

One factor in the decision to undertake these studies was the enthusiasm with which electric home heating has been accepted in the province. In spite of a decline in home building starts, more than 1,300 all-electric homes have been built in Ontario during the last two years.

Indications are that this number will more than double by the end of 1962.

# OFF THE WIRES

According to the statistics, Canadians are turning to electricity to get rid of their whiskers and the electric razor is the favorite shaving instrument. A survey conducted by Chatelaine Magazine of 934 households with adult males revealed that 68 per cent used electric razors compared with 28.3 per cent who used the safety razor. Only 3 per cent will face up to the straight razor. Men who use more than one type of razor account for the overlapping figures.

Gas-operated razors have not yet made an appearance, but they offer intriguing possibilities for a really close shave.

* * *

In a constant fight to maintain vital transmission and distribution lines across the province, Hydro utilities are beset by hazards ranging from sleet storms to forest fires and from lightning to air rifles. Even the birds and beasts tend to regard power facilities as fair game, and in the last few months the following outages have been reported:

Kirkland Lake residents went without power for a short period when an industrious beaver, working on a hydraulic project of his own, dropped a tree over the power lines. As the break was well off the road, it took a bit of finding.

Tracing a power interruption in the Sudbury area, Ontario Hydro crews found a dead goose at the scene of the trouble. Apparently the conductor had dropped from a broken insulator and burned through the crossarm. The sagging line was then broken by the unfortunate animal.

A bird, perhaps sold on the idea of electric heating, caused an outage throughout Belleville and much of Prince Edward County during the process of building a nest. The bird caused a short circuit on a 44,000 volt bus at the Belleville transformer station by trailing a piece of wet cord across the connections. And in Lindsay, a dead robin was the only clue to a local power interruption. It apparently blundered into the primary lines, causing a switch to kick out at the substation.

Troublesome as they are, birds must be a far greater nuisance in Indiana. A public utility in that state has enlisted the aid of two-faced plastic owls. It is hoped that they will frighten



away starlings and other birds which have a habit of roosting on electrical relay or transformer equipment. They appear to be doing a good job, for, when this photograph was taken, the owl had the roost to himself.

* * *

This is the time of year when the younger fry are supposed to skip gratefully off for another term at the little red school house. But it doesn't always work out that way, particularly with the teenager who may tend to look with more favor upon the prospects of a juicy pay cheque. In the past, arguments in favor of continued culture consisted largely of high-flown platitudes having to do with the rich inner life and edification of the soul. But now the Financial Post has come up with some cold hard statistics which dad can use to belabor the reluctant student.

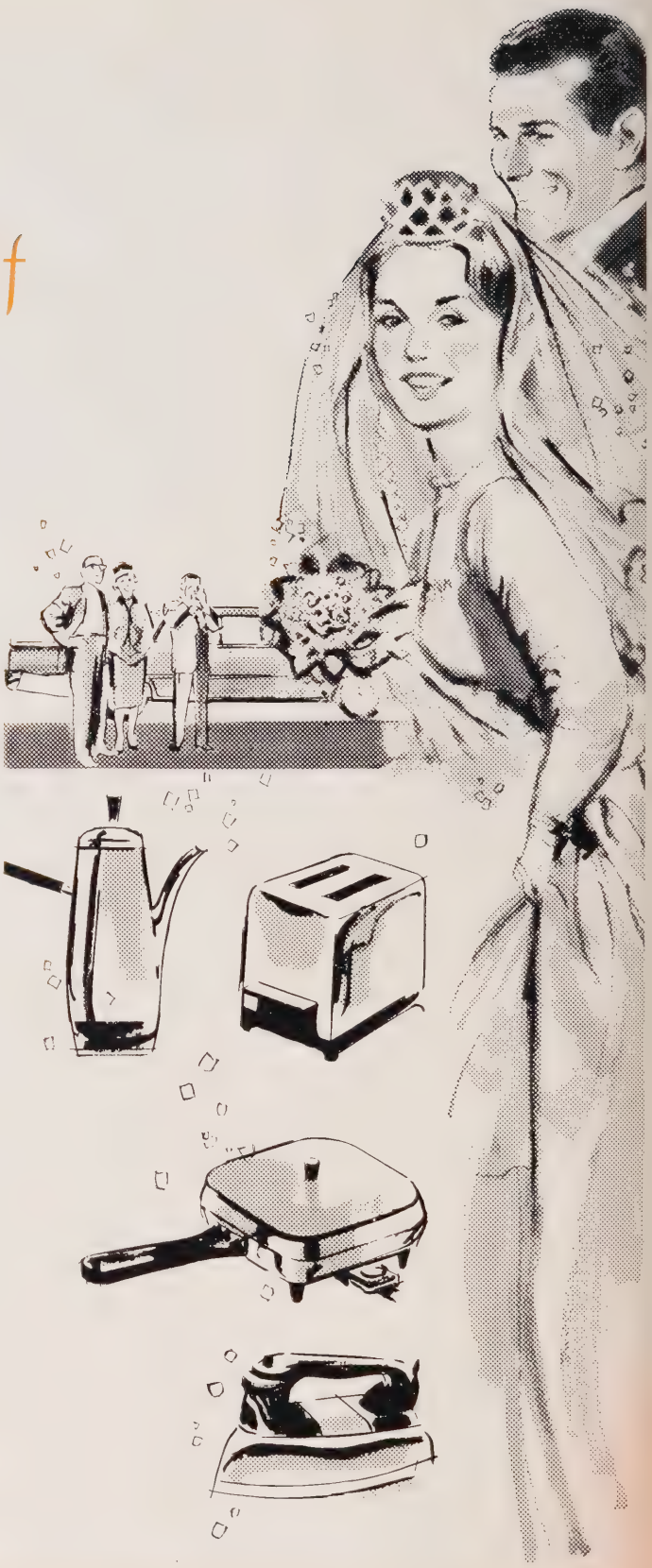
Figures garnered by the Post from the Institute of Life Insurance indicate that every additional year of high school adds $16,000 to one's lifetime earnings. Each year of college completed adds $25,000 to that total. A man with education below Grade IX will earn, on the average, $178,000 during his 40-year working life. But he will earn $243,000 if he completes grade XIII, and the college graduate will make $347,000 during his 40-year stint.

Perhaps junior can be persuaded to forego that sports car for a few more years if he considers that a high school diploma will result in $65,000 of additional pay and that a college diploma is worth some $100,000 on top of that. Any cool cat can dig this kind of music.

* * *

Danger lurks everywhere in modern society, and nylon panties are no exception. Under the heading "Amps in Their Pants", the Toronto Telegram reported recently on some interesting research carried out by an English chemist. Speaking before the Royal Society for the Prevention of Accidents, the chemist said: "Tests on female clerical staff wearing nylon underwear and leather shoes revealed charges of 600 volts after walking 25 yards." He suggested that women working in dangerous locations should wear "non-conducting footwear." ■

# *start them off with Modern Electric Appliances!*

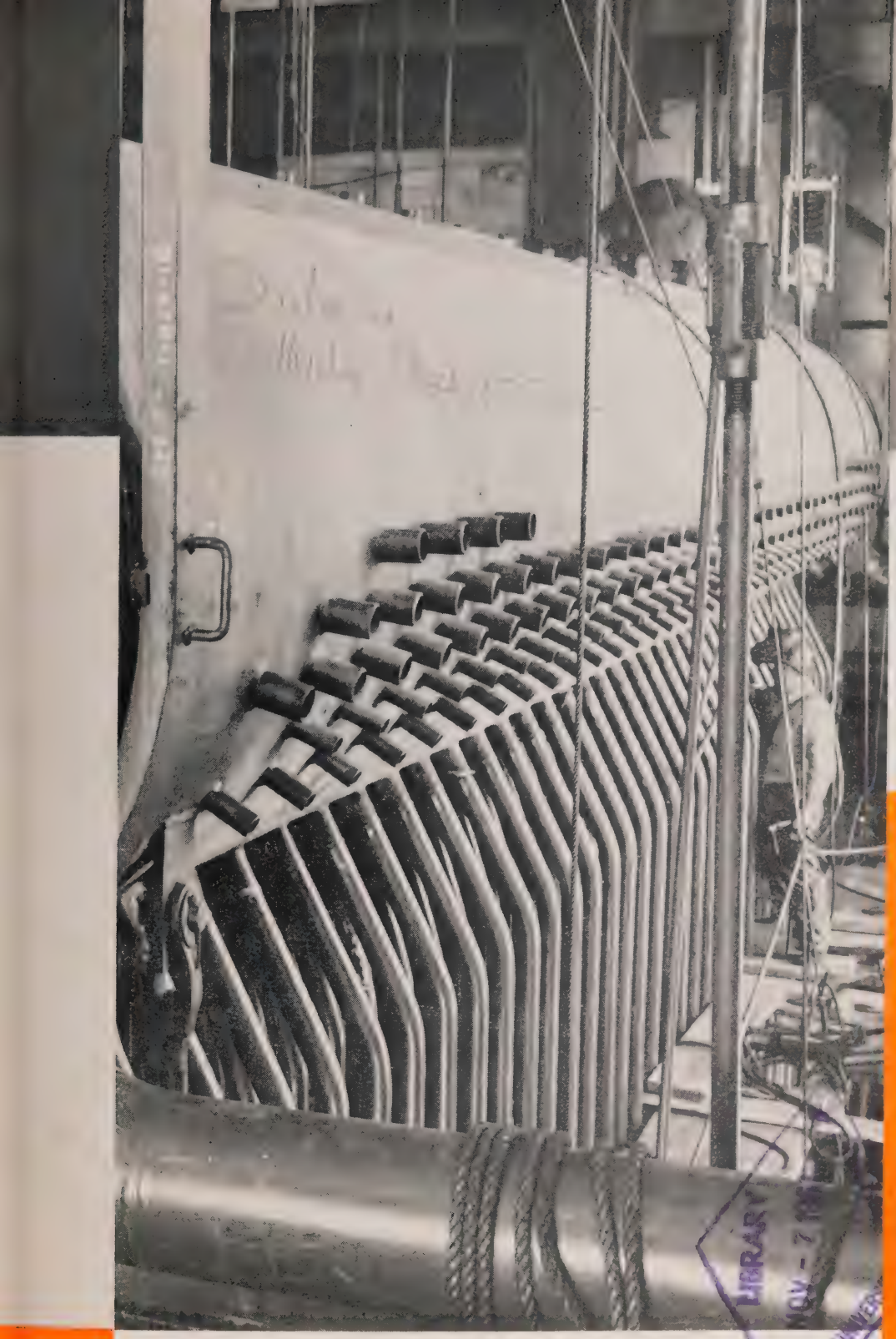


For that "once in a lifetime occasion," give the gifts you know they'll cherish . . . gleaming electrical gifts of enduring beauty that guarantee years of enjoyment and convenience.

Spend a little, spend a lot, there's a wide, wide choice of exciting new appliances in many modern designs with amazing automatic features at your electrical dealer's now.

You get more out of life—when you get the most out of electricity.

Adaptation of an advertisement, mats of which are available to the associated munici[illegible] L[illegible] Better Electrically campaigns.]





ONTARIO

# HYDRO NEWS

OCTOBER, 1961



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Subjects ranging from heart research to Canadian broadcasting and thermal-electric generation are discussed in this month's issue.

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# ONTARIO HYDRO NEWS

OCTOBER VOL. 48 NO. 10

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## ABOUT THIS MONTH'S COVER

SOME highlights of the October contents are introduced on the front cover. Dr. Fraser Mustard is leading a team of medical researchers probing the secrets of atherosclerosis. More than 100,000 programs radiate annually from C.B.C. antennae such as the one shown. And the giant boiler represents new era of power production in the Northwest.

Editorial

# THE RIGHT TO COMPETE

FREQUENTLY, we hear it claimed that Ontario Hydro and the municipal utilities have no right to compete for the home heating load. It is a point of view which has been supported, on occasion, in the press. This is a market, such claims allege, better served by other segments of the energy industry.

Why, comes the inevitable question, is a public power system actively promoting the increased use of electric heating? The argument advanced is that Ontario has developed all its low cost hydraulic power and must now rely on higher cost thermal and hydraulic generation to meet expanding loads. Why expand when it would be more economical to use other sources of power for home, commercial and industrial heating?

On the surface, it seems a point well taken.

But, scratching the surface slightly, we find that such reasoning fails to take into account the basic economics of power production and distribution.

After World War II Ontario Hydro and the municipal utilities were called upon to meet an unparalleled upward surge in demand for power. Hundreds of millions of dollars had to be spent on the rehabilitation and expansion of facilities as Hydro paced the march of economic and social progress—greater production from factory, farm, and commerce, more labor-saving comforts in the home. It was a vast investment in progress.

We now come to the problem posed by new sources of energy. Natural gas is a welcome addition to the energy resources of the province. While gas has not appreciably reduced overall growth in peak electrical demands, it competes directly with electricity in certain applications, notably residential water heating and cooking.

Unfortunately, this is the very revenue - producing consumption which is of vital importance to Hydro in absorbing the high cost of power facilities required to meet peak power demands. If a large part of this desirable market is lost to gas, Hydro—and this includes the local utilities—will immediately be faced with lower revenues, although debt charges and other expenses on the systems will remain constant.

Similarly, electric home heating is a highly desirable load, and very competitive. Through its highly flexible system, Ontario Hydro is able to take full advantage of the benefits of the electrical heating load without putting a strain on other consumers. Failure to take full advantage of these benefits would be contrary to Ontario Hydro's principle of providing power at the lowest possible cost.

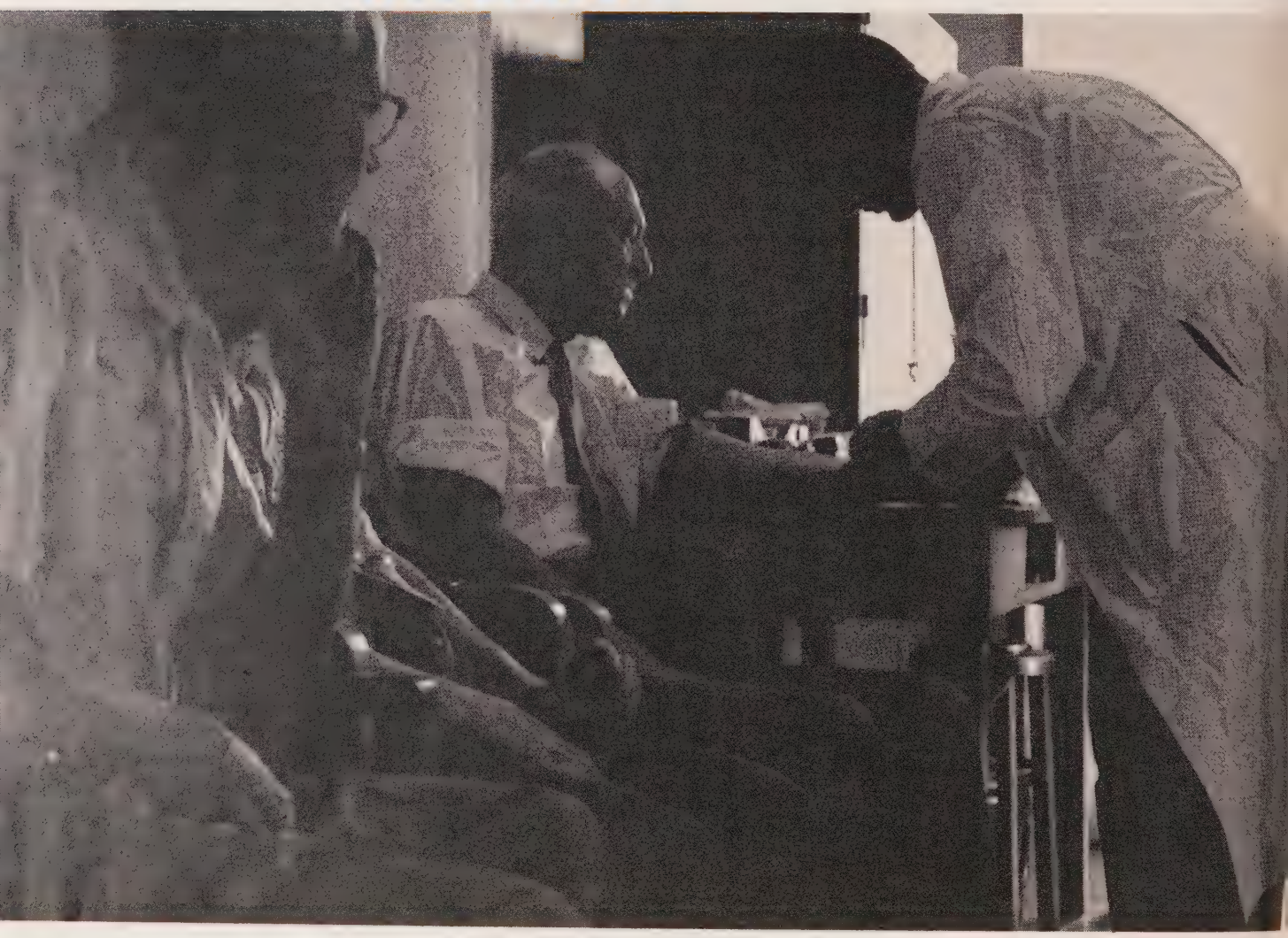
If Ontario Hydro and its associated municipal utilities do fail to compete in the energy market, they will find themselves facing spiralling costs, increased rates, and decreasing loads.

Over the years, the Commission and the municipal utilities have built up an equity in plant and personnel for the people of Ontario that amounts to millions of dollars. Failure to protect this equity by every means available would be a serious breach of faith with the people of Ontario. ■

# HYDRO LENDS A HAND AT HEART RESEARCH

*In Part One of this two part series, which appeared last month, the writer outlined some of the problems facing medical researchers in their study of atherosclerosis. He also explored some of the research Ontario Hydro is doing in the field of hydraulics. Here, he tells how some of the fruits of Hydro's engineering research on hydraulics have been put to good use in aiding medical research.*

by Ron Kenyon



*Through facilities at this busy out-patient's clinic at Sunnybrooke Hospital, atherosclerosis sufferers are benefitting from medical research already done. More and more is being learned about the disease.*

It was a happy coincidence that brought the doctors and hydraulic engineers together. Wallace J. Baxter, Ontario Hydro transmission engineer, had been visiting Toronto's Sunnybrook Hospital for some time as a patient of Dr. Fraser Mustard.

He knew of some of the work being done at Hydro in the field of hydraulic model building, and, in conversation with several Sunnybrook doctors, he learned

something of heart and coronary artery research being carried out at the hospital.

At Mr. Baxter's urging, the medical researchers sought advice from Orville E. Johnston, Ontario Hydro's hydraulic generation engineer, and Jack B. Bryce, Commission hydraulic engineer.

The doctors and engineers got together and discussed the problem further. Mr. Johnston and Mr. Bryce outlined some of the things that their researches in hydraulics had indicated to be true.

They pointed out that, in flowing water, sedimentation will take place at points which can be predicted by the hydraulic engineer. The characteristics of the chamber through which the water flows would dictate where, when, and to how great a degree sedimentation would occur.

The medical researchers were intrigued. They noted some startling similarities in these studies of sedimentation in flowing water and their own findings with regard to the flow of blood and the deposit, in the blood vessels, of blood components or platelets.

The engineers also explained some of the techniques they had used in their investigations—among them, the use of plexiglass models.

The next step seemed clearly indicated. Why not build plexiglass models that would be exact duplicates of a simple blood vessel system? Blood flow could be initiated through this artificial system and observations made as to the places in the blood vessels where sediment was being deposited.

For the job, Don Harkness, Ontario Hydro's assistant hydraulic engineer—design, called on Bill Crane and Rex Griffith, two hydraulic model technicians long-skilled in working with plexiglass.

The Ontario Veterinary College at Guelph was invited to join the project, and the Hydro technicians went to work in Hydro's hydraulic model laboratory at Islington. They built two plexiglass models designed to simulate simple blood vessel systems.

Plexiglass was suitable since, being transparent, it would allow the observers to witness the action of the blood, either with the naked eye or by microscope.

For the experiments, the researchers chose pigs fed on a pure fat diet of egg yolk, butter and similar foods. Why this diet? Well, the purpose of the research was to show that high fat diets increase the sticky qualities of the blood platelets so that they adhere more readily to the blood vessel walls.

At this point, Canada Packers pitched in with assistance for the research by providing the special foods required.

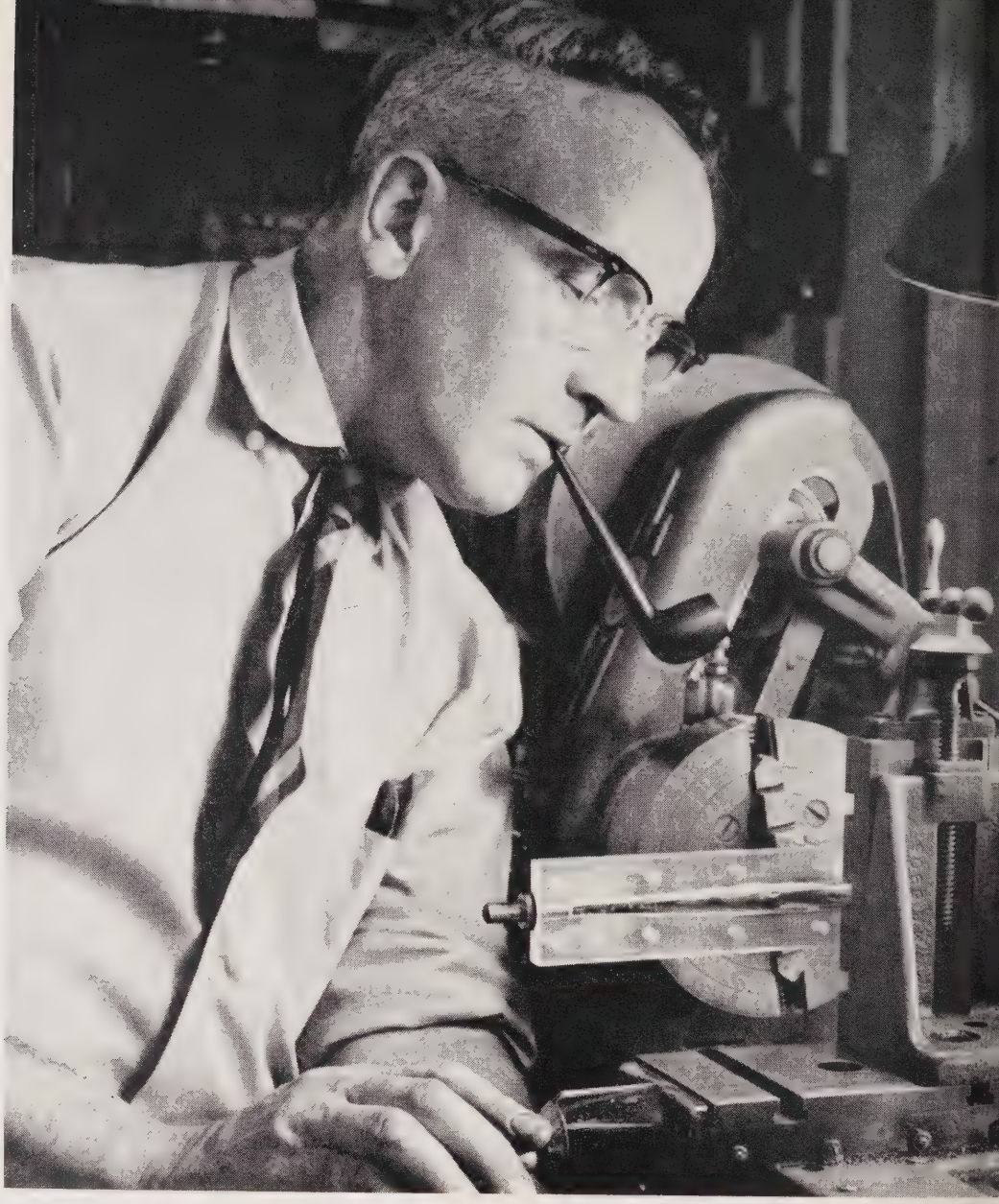
A series of practical experiments was now undertaken at Guelph. The arteries of the animals selected for the work were connected up to the model blood vessel systems. This didn't hurt the anaesthetized pigs, but it provided some significant information.

Using hydraulic formulae, the Hydro engineers





*Gifted medical researcher, Dr. Fraser Mustard, is Sunnybrooke doctor who worked with Ontario Hydro hydraulic engineers in project discussed here. Sunnybrooke (above) is DVA hospital noted for modern facilities.*



*Ontario Hydro technicians who worked on the medical study were: Bill Crane (at right); Rex Griffeth (at far right with Engineer Don Harkness). Models in brass and plexiglass were made for the atherosclerosis studies.*

predicted where blood deposits would build up. They said, for example, that where bifurcation, or branching, of the blood vessels occurred, turbulence would be created and deposits of blood platelets would appear in the blood vessels. This is just what did happen.

How important is this research? Some facts may indicate a measure of its significance.

Indicative of the seriousness of heart disease is the fact that nearly one quarter of all patients who die in DVA hospitals die of heart attacks. The disease is also the single leading cause of death in Canada as a whole, accounting for more than 60,000 deaths each year. Strokes represent another important cause of disability and death.

Atherosclerosis (hardening of the arteries) lies at the root of both diseases. In the one case, the blood supply to the heart is impeded by narrowing or




clogging of the arteries. In the other, the arteries of the brain are affected.

The heart and blood vessel system is extremely complex. The heart's job is to pump blood through 1,200 miles of blood vessels 100,000 times each day —driving the blood as far as the sun and back more than 150,000 times during a lifetime of 70 years.

Dr. William Osler used to say that a man is as young as his arteries—and the principal defect in them is that as a man ages, atherosclerosis sets in, the arteries calcify in certain places and tend to restrict the flow of blood.

The new research findings suggest that certain qualities in the blood may also contribute to faulty circulation.

Many doctors now believe that we eat a diet too rich in animal fats, causing a build-up of fatty substances, such as cholesterol in the blood stream. Moreover, we get too little exercise, so that the excessive fats are not burned up, but are deposited in these predictable places on the inner blood vessels walls.

Though there is no definite proof of this theory, it has prompted some doctors to take their heart patients off food like fat meats, eggs, butter, cheese and cream, replacing them with vegetable oils.

New York and Chicago have both started experimental heart-attack prevention programs. These are based on the knowledge that certain conditions seem to predispose an individual to heart attack, and, if two or more of these conditions are present, precautions should be taken.

Among such conditions: a family history of heart trouble, thyroid under-function, heavy smoking, overweight, lack of exercise, a high level of blood cholesterol and diabetes.

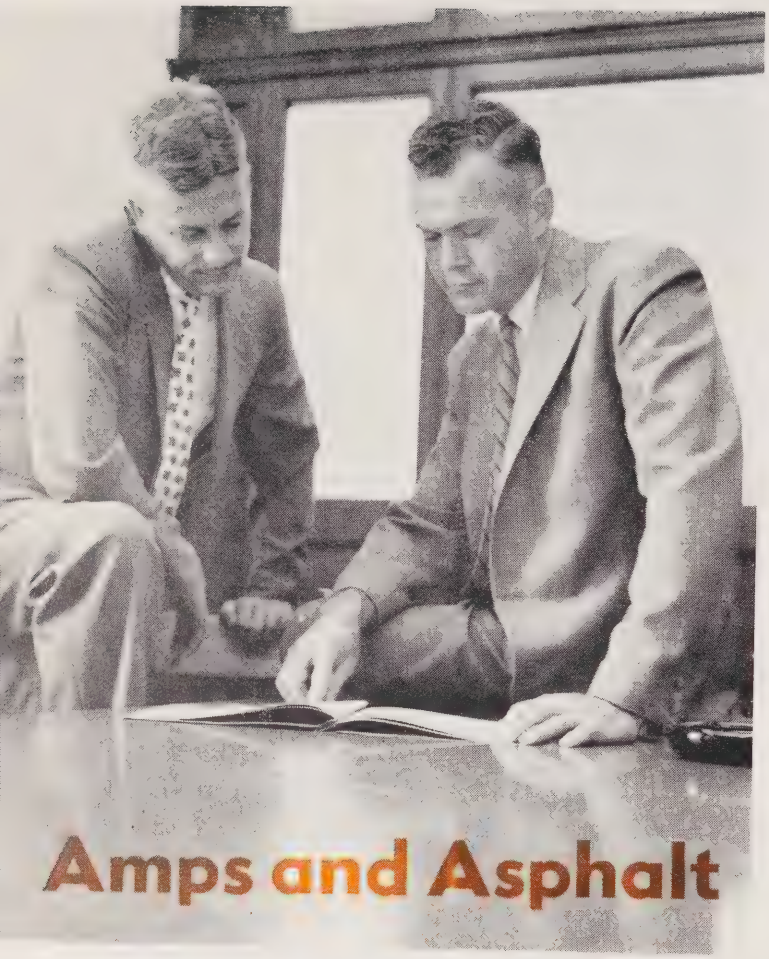
The Ontario Hydro Medical Services have also been at work, educating employees and their families in a way of living which should lessen the probability of developing coronary artery disease.

In these preventive programs, an effort is made to persuade people to eliminate, or at least reduce contributing factors. Men are urged to get more exercise, heavy smokers are urged to cut down, overweight people to diet, and cholesterol levels reduced by the replacement of animal fats with vegetable oils.

In the past, a heart attack was considered a virtual sentence of death. Now, the picture has changed radically. People like ex-president Dwight Eisenhower of the United States are living proof of this. Some heart patients have returned to busy jobs with only the admonition to "rest when tired."

Anti-coagulants, to ensure that the blood will flow more freely, have been widely used. Many patients now have regular blood tests and anti-coagulant medication. Under study is the use of fibrinolytic agents to actually dissolve existing blood clots.

Pitted against coronary artery disease and cerebral thrombosis is a world-wide, concerted research program. In this picture, Ontario medical men, with the help of Ontario Hydro hydraulic engineers and technicians, have made no small contribution to the growing storehouse of knowledge which, one day, will surely defeat these dread killers. ■



# Amps and Asphalt

*Toronto Hydro engineers, Clinton Goyette and Richard Fulford, sold construction company on the advantages of electricity.*

*A positive sales approach combined with engineering know-how is the right formula for winning industrial customers.*

by Max Lambert

TODAY's business and industrial world is highly competitive and the man with the good product who gets out and peddles it in a business-like manner is the one who will make the sale.

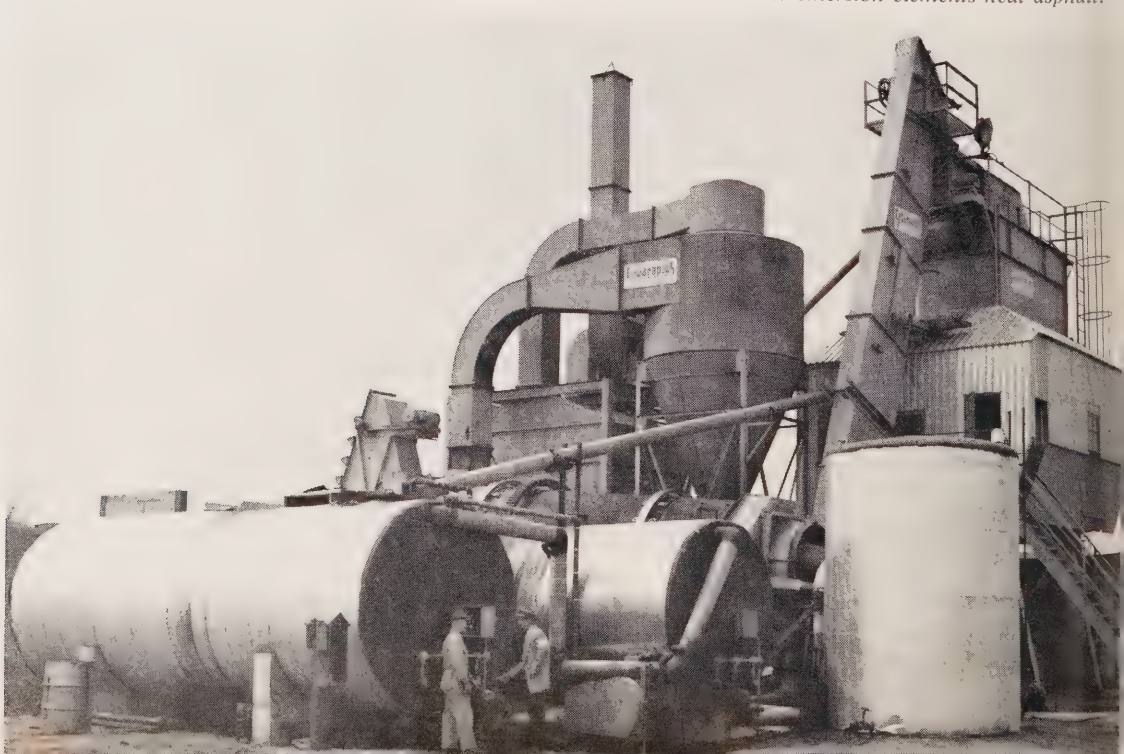
And this axiom holds good for public utilities just as it does for private business concerns.

The sale of electricity is no exception. Utilities face stiff competition from other power and heat sources. They have a good product to sell and know it. But industry doesn't always share their knowledge, and its top men often have to be shown that electricity is best for the job.

The Toronto Hydro-Electric System's engineers cum salesmen are good examples of the modern "get out and sell" men. Here is one instance to illustrate this approach.

Early last year when a letter reached Toronto Hydro from a Metro contractor, letting the utility know that a new asphalt plant was being planned

*Here's Rayner Construction Limited's neat, compact plant. The two asphalt tanks, one holding 10,000 gallons, the other 8,000, lie side by side. Electric emersion elements heat asphalt.*



and that underground cables would have to be relocated, a team from the Power Service Department went to work. Clinton Goyette, electrical industrial heating specialist, and Richard Fulford, district engineer, hustled out to Rayner Construction Ltd.'s plant at Leaside.

They discussed the company's plans with mechanical superintendent Elwood Fawcett and learned that the company (paving, bridge work and general construction) intended to replace its shaky, 30-year-old asphalt plant with a modern, automatic asphalt production system.

The old plant, where steam was used to heat the asphalt liquids, was inadequate. It was uneconomical, gave constant trouble, and was causing air pollution.

"An electrically-heated plant is your answer," Messrs. Goyette and Fulford told superintendent Fawcett. They gave him a brief run-down on the job electricity would do and its advantages . . . a clean system, reduced labor costs, greater safety, compact installation, power economies, efficiency, long life, easily replaced heating elements . . . and a better asphalt product.

Mr. Fawcett was intrigued, and the two Toronto Hydro men wasted little time following up the initial sales approach. Mr. Goyette prepared a thick brochure for the company outlining the proposal, including a detailed cost calculation. A copy was sent to Rayner's electrical contractor, Carson Electric Ltd.

"It didn't take much persuasion on our part to convince Mr. Fawcett that a look at several electrically-heated asphalt plants in the Buffalo area would be worthwhile," says Mr. Goyette. Rayner Construction's mechanical superintendent came back to Toronto more than ever convinced that electricity would do the heating job—and do it well.

"I won management's okay, and we went ahead with Hydro," he adds. "That's all there was to it."

Redesigned by Mr. Fawcett, the new $175,000 Rayner plant commenced operation last year. The heart of the new system is a push-button control centre which makes it possible for one man to mix aggregate and tars for asphalt and load trucks—all automatically.

Sand and gravel stored in the yard are dropped onto an underground conveyor belt system. Built-in vibrators sort the aggregate, which is fed into a dryer, where it is heated to the proper temperature. The aggregate is weighed and then automatically dropped into a mixer. Asphalt liquids are piped to the mixer from two storage tanks of 10,000-gallon and 8,000-gallon capacity. These are heated by thermostatically controlled electric immersion elements. As well, a 4,000-gallon tank of fuel oil, used to fire the aggregate's dryer, is itself heated by an electric immersion element.

Electricity has meant money in the bank for Rayner Construction. Although its hydro bill is up, obviously, its overall fuel costs are down. The immersion heaters in the asphalt tanks are switched on automatically at night to take advantage of off-peak rates, and the asphalt is ready for mixing with the aggregate when trucks arrive early in the morning for hot-mix loads.

Labor costs have also been reduced substantially. The new, almost automatic asphalt-making process has enabled two men to do the work previously done by seven. A stationary engineer is no longer required, and night and weekend supervision is unnecessary. Too, with their electrically-heated, fully-insulated piping system, the firm can now handle winter contracts.

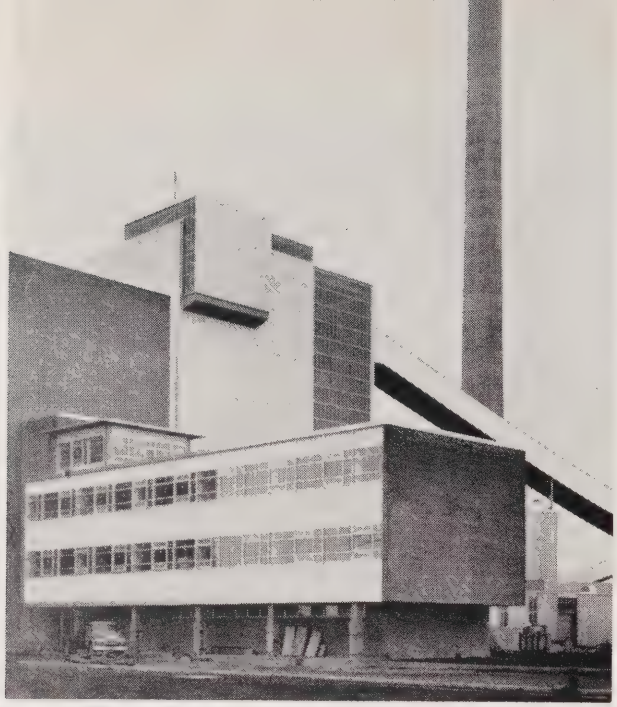
For Toronto Hydro, the switch by Rayner to electricity has meant increased revenue. This customer's load jumped by 145 kilowatts after renovation, and, in the past year, the utility has received some $6,000 of additional revenue.

Engineers Goyette and Fulford are understandably happy with this bit of selling. "It's all part of our job," they say, "we're engineers, but we're also salesmen."

Neither is resting on his laurels, and in recent months they have sold other Toronto firms on electricity. Mr. Goyette persuaded an art firm to install an electrically-fired kiln for ceramic baking, and another big company to use electricity for the process of curing rubber and sealing it to metal tire valves. Several auto paint shops are using electricity for their infra-red paint dryers as the result of their efforts. ■

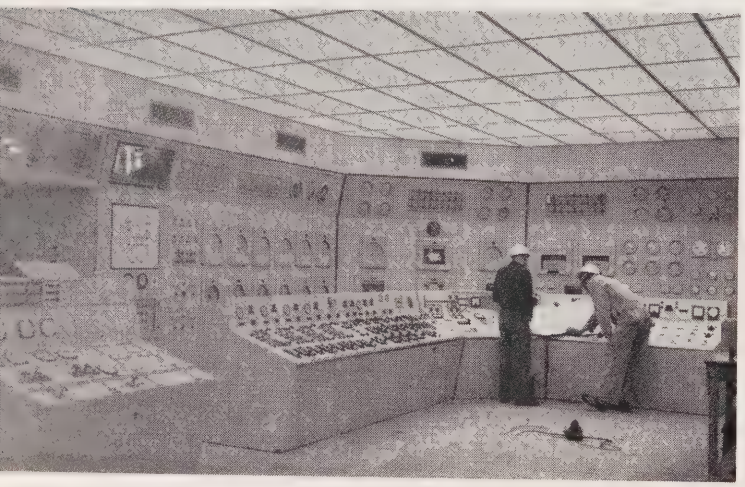
*Rayner's Elwood Fawcett looks at temperature controls on one of the asphalt tanks. Electricity does the heating job, does it well.*





*Top left: Concrete finger poking into the sky over the Lakehead represents a new era of power in the Northwest. Administration building of Thunder Bay G.S. is in foreground. Lower left: Finishing touches are applied to control room. Right: This turbo-generator unit has a capacity of 100,000 kilowatts.*

## A PROGRESS REPORT



# Thunder Bay G.S.

A LOFTY concrete chimney towering 350 feet into the sky is a new feature of the Lake Superior shoreline. It will be shown on navigation charts of the future, and ships may use it to "home in" on the twin cities of the Lakehead.

But the tall stack of the Thunder Bay Generating Station was not built as an aid to navigation, and its presence at Fort William heralds a new chapter in the story of power production in the Ontario Northland. This is the first thermal-electric plant built by Ontario Hydro outside Southern Ontario. It is scheduled for service early next year, and first coal has already been delivered.

Several factors influenced the Commission's decision to build this steam plant in a land long renowned for its lakes and rushing rivers. An overriding consideration was the complete dependence of customers in the 98,000-square-mile area served by the Northwestern system upon hydro-electric power for their electrical requirements.

The primary problem in the Northwestern system is to provide adequate resources to meet power requirements over extended periods, with the ever-present possibility of sharply reduced stream flows or sudden large increases in the requirements of industry with idle production capacity. Changes in industrial requirements are of particular concern in the Northwest, where the needs of a single customer can have a marked effect on the relatively small system load.

And while there are several undeveloped hydraulic sites in the Northwest, their development at this time would only accentuate the problem of supply during periods of adverse water conditions.

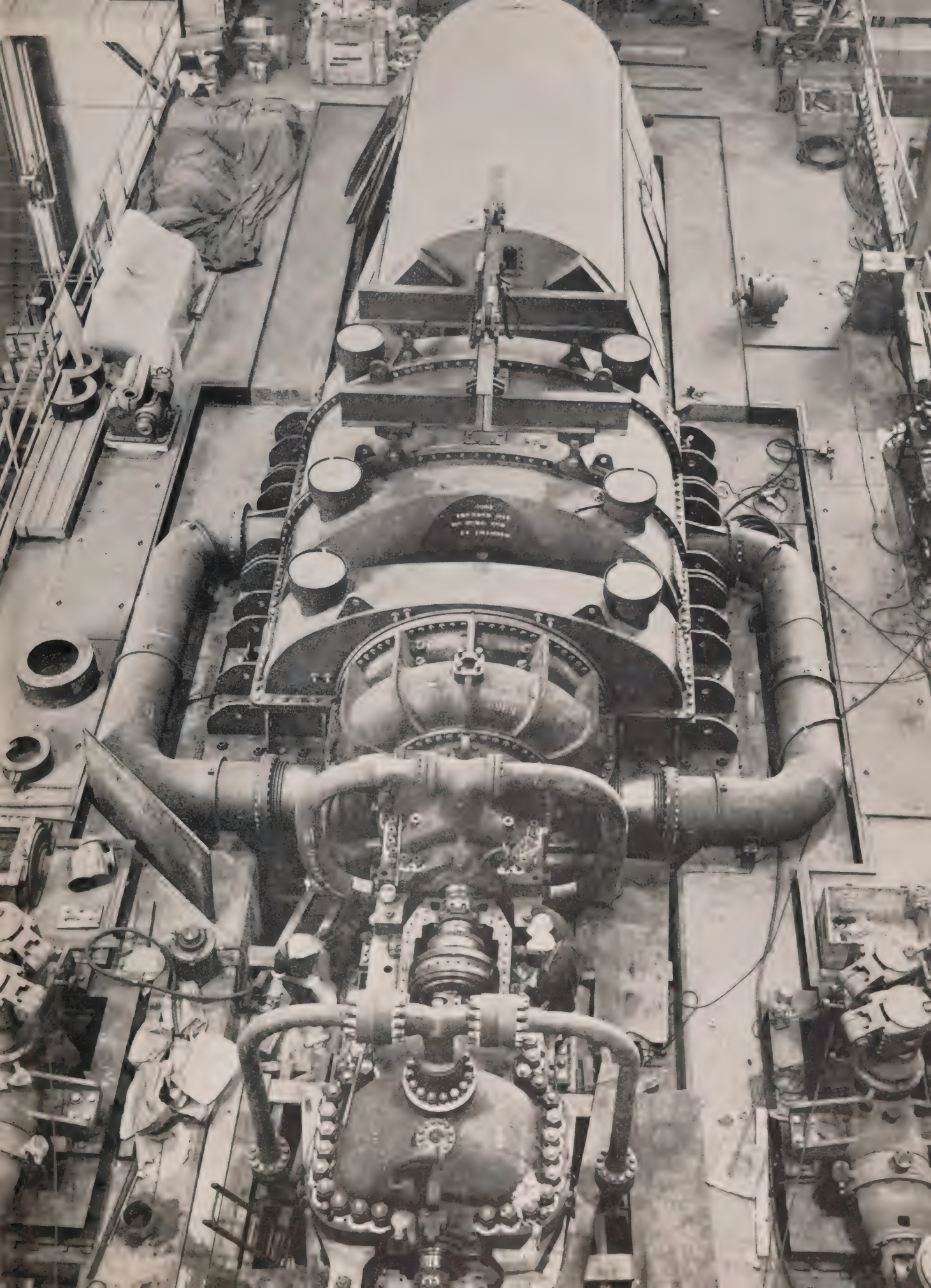
Establishment of an inter-connection with the Northeastern and Southern Ontario Systems has been suggested as an alternative to thermal-electric power, but this has been ruled out by the economics of power supply. Until the load in the Northwest is greater, it will be cheaper to supply power by creating thermal stations in the area than to provide such an interconnection.

At the site itself, rapid progress is being made. All of the station buildings have been virtually completed, the 700 foot dock will accommodate the largest coal carrier, and the automatic coal-handling system will make short work of its cargo. The boiler is presently undergoing pressure tests, and the installation of the turbine is about complete.

Work is presently underway on the instrumentation in the control room and on the high pressure piping system.

In its initial stage, Thunder Bay G.S. will have a capacity of 100,000 kilowatts from a single unit. Operating at its full capacity, the unit will require about 39 tons of coal per hour. However, the plant can be extended as required to meet the needs of the system.

It is expected that some 20,000 tons of coal will be unloaded this year, which will be sufficient for testing purposes. Additional deliveries may be required in 1962, but the plant is scheduled to remain on a standby basis to provide system security until such time as load growth requires its regular operation as a peaking station. ■



# A UTILITY LOOKS AT ELECTRIC HEATING

*This article is condensed from a paper delivered at the 1961 annual meeting of the Electric Heating Association. The author is manager and secretary of the Township of Sandwich West Hydro System.*

*by David H. Pope*

THE first thing that any observer will notice about municipal utilities these days is that they are waking up, and, although some are still a little groggy, they have started to sell electricity. Most utilities are doing at least something in the way of load promotion.

A majority are doing this because they clearly understand the very serious problems facing Hydro and, for that matter, the entire electrical industry.

A few are simply caught up in the general enthusiasm, and are promoting for the sheer fun of competing with the local gas company.

Others have, quite frankly, been embarrassed into promoting, and there are still others that will have nothing to do with it.

But if you do much listening to Hydro small talk these days, you will hear more and more about load promotion. It is by far the hottest item in utility circles. Nearly everybody is caught up in it, and nearly every utility is doing something about it.

Having decided to promote business—exactly how should a utility go about it?

TO BE effective, sights must be fixed on specific loads, specific uses for electricity in the home, and then these uses must be promoted intensively. The average utility does not have the resources, in terms of manpower or money, to pay close attention to every possible electrical device. It must be selective and try to choose loads that will increase sales of energy with as little effect on peak demands as possible.

The first step is probably to examine our traditional markets in the home, and it is not hard to pin-point the two major appliances that have contributed most to the development of Hydro in the residential field. They are the water heater and the range and, together, they account for much better than half the electrical consumption in Ontario homes today.

Of the two, the water heater is, undoubtedly, first choice. It is a big user of energy, it has a near-perfect load factor, and we can even gild the lily by interrupting service to it at peak load periods. Every utility that is at least warm and breathing, will promote water heaters.

But what about the range? At first glance this doesn't look nearly so good. Its annual consumption

of electricity is only about 200 kwh for each kw of demand as compared with better than 4,000 for the water heater. Furthermore, the range is used at regular daily intervals, one of which is quite likely to coincide with our peak.

On the surface, the range seems to be a bad bit of business for the average utility.

But this isn't how it works out. The range is a much better behaved appliance than we might expect. Any reasonable number of ranges do operate with a diversity that could hardly be anticipated. Range load is a valuable load, and one that everyone will work very hard to keep if it is threatened.

Now let's look at electric heating, using the water heater and the range, both old friends, as standards of comparison.

THE average electric heating installation uses about 1,200 kwh per year for each kw of installed capacity—not so good as the water heater by any means, but six times better than the range. A heating installation can't possibly affect the utility peak two months of the year, and it is very unlikely to do much damage for another four months. Furthermore, we get back 1.35 cents for each kwh sold for electric heating as compared with an average of 1.13c per kwh for all other domestic use in Ontario municipalities. Pretty good, but there is more to come. For electric heating is the one load that automatically brings all the others into the house along with it. Virtually every electrically heated home is an all-electric home.

This, then, is the kind of load that should be given a very high priority in any promotion program.

And yet some utilities are still lukewarm toward electric heating and a few seem to be opposed to it. They say "Electric heating may be a good load, but it requires too much in the way of system capacity. We just don't have the capacity to handle large residential loads like this."

THERE are two things wrong with this point of view. First of all, I think these utilities flatter themselves too highly on their powers of persuasion. They are a little like a minister wondering whether it is wise to exhort his congregation to give up golf and come to church because he is not sure he can accommodate the crowd. Electric heat comes in gradually, and we have to work very hard, right now, to get 3 or 4 per cent of the new homes and a small fraction of 1 per cent of the older homes. System capacity can be increased at a very comfortable speed to meet this kind of demand.

Secondly, I don't think large loads, known in advance to be coming, have ever done much damage to distribution systems. What really hurts is a lot of little loads that come on unexpectedly and combine to overload utility lines and equipment. The power company serving New York City seems to be quite able to cope with all the new multi-million dollar skyscrapers going up. But not long ago it was brought to its knees by an unexpected number of peanut-sized room air conditioners stuck in two- and three-room tenements around the city. Yet, I have never heard of a utility unable to take care of known loads.

A FEW utilities feel that electricity has no particular talent for heating, and that the future of electric heat is so limited it is not worth bothering about.

However they may have formed this opinion, I think they should find out a bit more about electric heat before writing it off completely.

One good way is to ask the real experts, the people who now live in electrically heated homes, whether they are getting their money's worth. The utilities now promoting electric heat have done this, and they would certainly call a halt to promotion if their customers were unhappy.

Another very good way is to watch the frantic efforts of gas distributors when they hear of an electrically heated home going up. They will offer the owner everything except the moon on the end of a piece of string to get him to change his mind.

Dozens of utilities can cite examples of this remarkable tribute to electric heating by people who *do* know all about it—our competitors.

THERE is, possibly, another reason for a utility taking a dim view of electric heating. It requires a lot of work, and is quite likely to bring problems to disturb the pastoral serenity of a utility office.

And promoting electric heating certainly does get a utility involved—or perhaps it would be better to say that if a utility is going to promote electric heat at all, it had better become very much involved.

It is not good enough to simply stand by the fuel pump and tell our customers that we have energy for heating at 1.35 cents and how many miles they get to the gallon is not our concern. For a while, at least, and, perhaps, for a long while, we have to worry and nag and scold the builder and the homeowner until we are sure the job is right and will perform effectively and economically. A single bad heating job today can do an enormous amount of damage.

But before we can start worrying about whether a heating job is going to turn out well or not, there are two things that must be done.

First, we must decide what we mean by a good heating job. This might be defined as one that gives

the customer a high degree of comfort and convenience with construction and operating costs in reasonable proportion to each other.

Three factors—comfort, construction cost and operating cost must be brought into a neat and careful balance. And the customer is the final judge as to whether this has been done. His is the only expert opinion that counts.

And the customer has already endorsed the Triple Seal Standards of this Association—many times. Right across the Province customers living in electrically heated homes built to Triple Seal Standards are happy with their heating systems. And, almost without exception, when someone skimps on the job or tries to cut corners from the standards, a utility finds itself with an unsatisfied customer on its hands.

Having decided what a good heating job consists of, the utility is confronted with the problem that its lobby is not full of potential customers, and it is going to have to track them down. Advertising is good, as far as it goes, but it doesn't go far enough. Properly used, it can make the public aware of electric heating, aware of Triple Seal and, most important of all, aware that the name Hydro is behind this thing.

The best we can hope to do is to create a generally favorable impression in peoples' minds. As long as we regard advertising as a sort of backdrop in front of which we perform, then I think we will have put it in its proper place.

The real work must be done by utility people themselves.

FIRST of all, a utility should go to every large building contractor and offer to prepare an electric heat study for each model home that he intends to build that year. Perhaps the builder can be interested in electric heating. Perhaps not. But at any rate he should be willing to at least receive the reports in case somebody inquires about electric heat.

Then we should see that all our friends, neighbors and employees make a point of asking about electric heat when they visit model homes.

The utility has another lump of sugar in its pocket that may or may not tempt the builder—that is, underground service. Tempting or not, it should not be given up too easily, but used to bargain for electric heat and water heaters in pretty business-like fashion.

To catch the smaller builder, the fellow who puts up a few homes and additions to existing homes each year, the utility can check regularly with the municipal building inspector to see who has taken out permits. Again, the utility can talk up electric heat and give the owner or builder a written report.

All this means a lot of paper-work, a lot of time preparing heat loss calculations, and a utility may begrudge this time. But I think, if you look around, you can usually spot somebody who isn't busy all the time. We have the work done by operators on the night shift. I am quite certain that girls could do much of the routine calculating, because it really isn't so mystical as we like to believe.

But the point is, a utility must be ready to do a lot of figuring to get a few jobs. Our own current success ratio is about 7 or 8 to 1—a ratio that may seem like poor performance to utility people, but it is performance that many an electrical contractor would consider to be very good. We just aren't as accustomed to competition as the contractor.

IF THIS kind of thing is done fairly conscientiously the utility will probably get the odd heating job, and the next thing it must do is make very clear to the builder and the electrical contractor that it is lining up with the owner and nobody else. Better still, it should offer to become the owner's agent to see that he gets a square deal. Some builders have difficulty with small dimensions, and will mistake 2″ of insulation for 3⅝″, and they think a vapor seal is some kind of animal the Eskimos hunt. This is the kind of thing the utility can watch for. It will entail ruffling some fur, but sooner or later the cat will understand that it is simply facing in the wrong direction.

Once the home is completed, both the owner and his wife will have to be given a short course in electric heating, particularly the use of thermostats. Thermostats, like women, have been around for a long time, but they are still not universally understood. Many people are firmly convinced that the temperature of a room can be raised from 60 degrees to 70 degrees more quickly if the thermostat is set at 80 degrees.

ALL THAT remains now for the utility to do is to keep a close watch on the customer's account, measuring it against the actual degree days for each month. If the consumption is too high the account should not be mailed out. It should be taken out by a persistent fellow who will worry about it until he finds out where all the kilowatt-hours went.

Electric heat, then, is a load worth chasing and chasing hard. To get it an Ontario utility must put the Triple Seal Standards of this Association before the people and back them up with the name Hydro.

Hydro is a good name and one to which the public will respond with confidence. It is our collective signature and, like our personal signatures, must be used very carefully.

Which means that once we have used it to sign electric heating, we must be prepared to back it up. ■



# A HAVEN RESTORED

*Built in 1915, the Eugenia dam on the Beaver River is undergoing a face-lifting*

Fishermen, cottagers and a host of nature lovers from many parts of the province will get back one of their favorite havens with the reconstruction of the Eugenia power dam, now underway, some 30 miles southeast of Owen Sound. The project will restore the power reservoir to its original level.

Ontario Hydro created the 1,700 acre artificial lake in 1915, when it built the dam to supply water to the Eugenia Generating Station on the Beaver River. Power was its purpose, but the area soon became a favorite haunt for sportsmen.

The dam had been under careful observation for many years, and late last year engineers found that concrete deterioration, particularly in the upper courses, had reached serious levels. Concerned that the dam might not withstand the pressure brought on by the next spring freshet, and aware of possible public hazard, the engineers decided to reduce the level of the reservoir by 13 feet. This was accomplished by cutting holes in the 2,200-foot-long dam at the necessary level, and while this reduced the power output, the generating station remained operational.

Because the $587,000 it will cost to rebuild the dam is not fully justified economically from the standpoint of power production, it is anticipated that the provincial government, which has an interest in maintaining the reservoir as a recreational area, will pay a share.

Work on the new dam is well advanced, and it is expected to be completed before freeze-up this year. From 40 to 50 men are employed on the project, and they will use some 135,000 tons of granular fill in their rebuilding efforts.

And fishermen can take heart. The Eugenia reservoir will be restored to its former level by the opening of the trout season next spring. ■



*Top photo shows Eugenia dam and reservoir as they appeared before Ontario Hydro engineers ruled that the aging dam posed a hazard. Holes cut in the concrete, left, before last spring's freshet, relieved pressure by reducing reservoir level.*

# A Hundred Thousand Programs

One of the things that makes Canada "different" is the fact that we—although a capitalist country dedicated to the principles of private enterprise—have come to expect our governments to take the lead in protecting and preserving our basic resources for the enjoyment and use of all Canadians, despite the accidents of geography which may make the distribution of those resources seem inequitable.

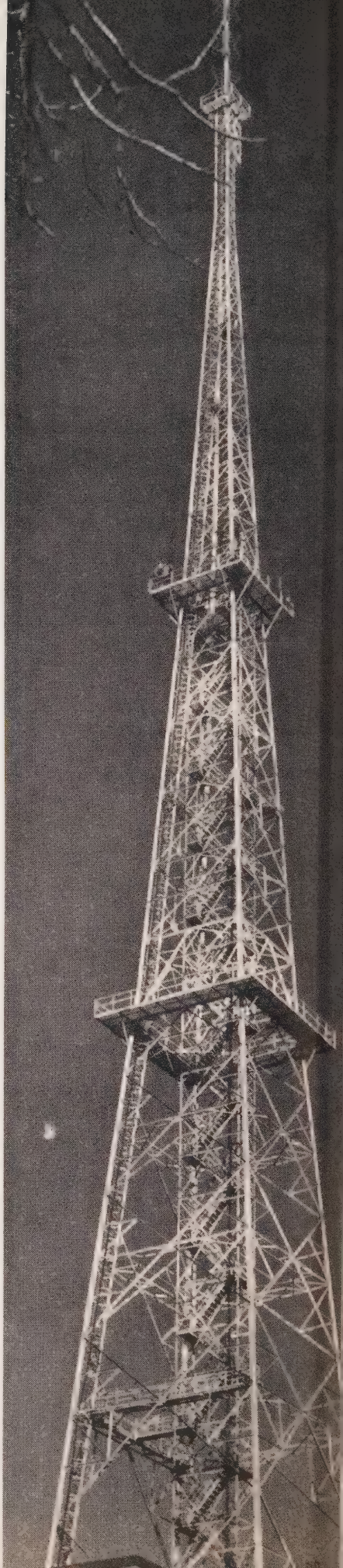
Canada is a nation that was founded in opposition to natural geographical laws. Confederation—itself a giant form of compromise—marked the first in a series of steps which have made compromise a typically Canadian approach to the solution of its problems. These steps have led to the major compromise in Canada today—compromise between public service and private enterprise which preserves for us all a guarantee of Canada's continued existence.

Canada's cultural and natural resources are preserved by organizations shaped by the needs of Canada. In the same way that Ontario Hydro was established in the public interest to conserve and administer one of this province's priceless resources, the Canadian Broadcasting Corporation was established to conserve and propagate Canadian heritage and ideals in the field of communications.

Without east-west communications, Canada could not exist as a united, vigorous force in the world today. The story of our communications is one of a continuing fight against economic and geographic odds, and against the over-development of natural north-south lines of contact which exert a strong and continuous pull upon all aspects of Canadian life.

On November 2 of this year, the CBC will celebrate the 25th Anniversary of its incorporation. Since this Crown Corporation touches us all, we might reflect on the beginnings of the CBC which, like Ontario Hydro, was created to fulfill a demand for a vital service.

The public system of broadcasting in Canada resulted from the need for a high standard of broadcasting that would express the varied facets of Canadian life and would interpret the different regions of Canada each to the other. In this way, it was felt that broadcasting would be a powerful instrument for the encouragement of Canadian unity. The CBC was created out of the conviction that these aims could best be served by placing the control of broadcasting in the hands of an independent public corporation acting as a trustee for the Canadian





*Off-camera view of set during shooting of the Musicmakers, a popular CBC television show, indicates extent to which radio and television industry relies on electricity. High standards of CBC production have won it international fame and attention.*

# Year

*The CBC was born*

*25 years ago;*

*like Ontario Hydro,*

*it was created*

*to fulfill a demand*

*for a vital public service.*

*by Leslie Reid*

audience, and responsible to this audience through their elected representatives in Parliament.

Similarly, Ontario Hydro was created by an act of the Provincial Legislature, and this was brought about by repeated petitions from leading civic and business organizations and individuals. It is responsible to the government under the terms of the Power Commission Act, but, within the framework of the Act, Ontario Hydro is an independent body corporate with broad administrative powers.

During the twenties the excitement of the new medium of radio spread through Canada as it did through other countries. By 1928, there were more than 60 radio stations licensed to operate in this country. New stations, organized by small radio clubs and large corporations, continued to spring up. Yet, despite the growth of the medium in Canada, radio was facing handicaps which prevented the full development of an adequate Canadian service. Handicaps were the lack of coverage, due to the vast distances which separated Canada's individual communities, problems of distribution of programs, also due to Canada's distances, and further problems which could be related directly to Canada's economy.

This provided the setting for the 1928 Aird Commission, which led to the establishment of the Canadian Radio Broadcasting Commission in 1932, and the establishment of the CBC to replace the CRBC in 1936.

It is worth noting that publicly-owned radio under



*Formation of the Canadian Broadcasting Corporation was still years away when youthful Jack Dempsey (left) was interviewed on radio, in Canada, in 1920s. Equipment then, including great horned microphone, was a far cry from that in use today.*



*Special hour-long TV program, "Memo To Champlain" helped open Canada's coast-to-coast microwave network in July, 1958. Seen are Alphonse Ouimet, president of CBC (left) and T. W. Ede, president, Bell Telephone of Canada, who were in show.*

the direction of the CBC was not the complete nationalization of radio visualized by the Aird Commission. Parliament recognized the depressed economic condition of Canada at the time. They could not accept the principle of duplication of service with a private and public service because the country could not support it. Nor could radio be supported by either one system or the other, working alone. It was made clear that there could exist but one system—a compromise based on co-operation between publicly-owned and privately-owned radio stations.

The parallel between the CBC and Ontario Hydro breaks down at this point, for no such co-existence exists within the Hydro system. Ontario Hydro and the 350 municipal utilities which purchase power from the provincial Commission are all public bodies.

But the CBC compromise seems to have paid off. Starting with eight CBC-owned or leased radio stations in 1936, the CBC now operates and administers the world's longest and most complex radio and television networks, and performs this job in two languages.

The CBC of today is big business. It employs more than 7,000 people, and last year operated with a budget of $101,000,000. Of this amount, a little more than $59,000,000 came from public funds.

In contrast, Ontario Hydro has been largely self-sustaining from its inception. The Provincial Government, however, guarantees payment on all bonds issued by the Commission, and has materially aided the development of agriculture by contributing towards the capital costs of extending rural distribution facilities.

From its own revenue and public funds the CBC provides a formidable list of services. They include: two complete and distinct broadcasting services, in English and French; three national radio networks; seven regional radio networks; radio service to the North; a bilingual FM network; CBC-owned radio and television stations and production facilities; two national television networks; regional television networks; station management and programs to Canada's armed forces.

Operating through seven time zones, the CBC maintains radio and TV interchanges with foreign countries and provides more than 100,000 programs per year in English and French, on radio and TV.

Further parallels can be drawn between the CBC and Ontario Hydro if one examines the four basic principles underlying the CBC's direct role within the national broadcasting system. They are:

To be a complete service, covering, in fair proportion, the whole range of programming; bringing things of interest, value, and entertainment to people of all tastes, ages, and interests.

To link all parts of the country in two ways: (1) through the inclusion of a wide variety of national and common interests in its program services; (2) by using its physical resources to bring the national program service to as many Canadians as finances allow, whether they live in remote or heavily-populated areas.

To be predominantly Canadian in content and character. It should serve Canadian needs and bring Canadians in widely-separated parts of the country closer together, contributing to the development and preservation of a sense of national unity.

To serve equitably the two main language groups and cultures, and the special needs of Canada's various geographical regions.

This public corporation, working in partnership with private enterprise, and receiving the interested support of Canadians in all walks of life and all parts of Canada, has developed as another great national venture by determined Canadians. ■

# along hydro lines



## Unique Vehicle Speeds Servicing

Latest addition to the service fleet of the Niagara Falls H.E.C. is this "articulate elbow" truck. Manufactured locally, the vehicle features a fibreglass basket which will withstand a 30,000 volts-to-ground test. This safety feature, plus the mobility of the elbow, permits servicing of street lights, re-fusing of transformers and other tasks with speed and efficiency and without interfering with traffic. ■

### American steam unit breaks Through the size barrier

The Consolidated Edison Company of New York has ordered a steam generating unit with a capacity in excess of 1,000,000 kilowatts. This is the largest single steam unit ever ordered by a utility, and it marks the first time that the 1,000,000 kilowatt level has ever been breached.

Company Chairman Harland C. Forbes explained that recent developments in technology had made feasible, machines of this size. He said that for utilities large enough to absorb such great blocks of power there would be substantial savings in investment costs per kilowatt of power. ■



## Proud Moment for Stouffville

Stouffville P.U.C. commissioners Edward H. Neville (chairman), Walter Atkinson and Reeve Kenneth Wagg watch Don B. Ireland, director of Ontario Hydro's Consumer Service Division, cut ribbon to open utility's new office building. Stouffville is in Hydro's central Region, a few miles north of Metropolitan Toronto. This is the first time Stouffville has had an office of its own. At the rear is a six-vehicle garage. The building cost $25,000 and was designed by Chairman Neville. ■

### Growing rural electrical requirements Reflected in move by Ontario Hydro

Hundred-ampere outdoor service entrance boxes and circuit breakers will go on sale at Ontario Hydro's 98 rural area offices this fall to help farm and rural customers meet growing electrical needs.

Farm customers have been urged to install outdoor boxes to provide a central point of supply for distribution to their houses and farm buildings. Lack of suitable outdoor equipment made such improvement difficult.

Hydro will carry the outdoor boxes, with socket bases and breakers, until they are available through regular commercial suppliers. Sale of 200-amp equipment is also being contemplated. ■



## A half Century of Service

When MacDonald White, Toronto Hydro's genial assistant general manager, returned to his office after a short absence one day recently, he could scarcely believe his eyes. It had been transformed into a floral sanctuary and, in one corner, 50 candles flickered on a massive cake. It was his associates' way of saying thank you for 50 years of exemplary service—completed that day. Mr. White is shown in the photograph with some of the "conspirators" who arranged the surprise. ■

# municipal briefs

**North York H.E.C.** plans buying for building. Council has approved a scheme to finance purchase of a $375,000 lot as a future site for a new head office. The land has a 400-foot frontage, and is located immediately north of Ontario Hydro's new Central Region office currently under construction.

**Hamilton** will soon be among the best lighted communities in Ontario. By next winter nearly 20,000 lamps will light 440 miles of streets. Among the goals of the present lighting program is the installation of mercury vapor lamps on all main approaches to the city. Secondary arterial roads are being illuminated with 500-watt incandescent lamps, and residential streets with 100-watt lamps.

**Toronto Hydro** has obtained approval under the municipal winter works incentive program for 1961-62 to carry out a $300,000 program of underground duct construction in the City which would not normally be undertaken at this time. Under the provisions of the winter works program, the Federal Government assumes 50 per cent of the direct labor costs, and the Provincial Government pays 25 per cent. Government assistance is not extended to include material, engineering, overhead or most supervisory costs. To be eligible for the subsidy, the work must be carried out between November 1, 1961, and April 30, 1962. The program should provide employment for approximately 100 men directly, and the materials required could conceivably make work for as many more. The program is quite distinct from the utility's regular program of underground construction.

**Swansea Hydro** plans to spend $178,000 in 1961 and 1962. The two largest items are $83,000 for a new sub-station and improvements to existing stations, and $36,000 for the purchase of water heaters for rental purposes.

**Port Credit P.U.C.** proposes to refund all deposits held on behalf of residential customers and to adopt a $3 "change of occupancy" charge to help offset such expenses as meter reading, changing addressograph plates and rendering partial bills.

**Galt P.U.C.** has published a comprehensive handbook for employees to acquaint them with commission policies and working conditions. The introduction includes this laudable paragraph: "It is recognized that the Commission performs essential public services, and employees must be prepared, at any hour of the day or night, to assist in providing these services. The principles that guide our work affect the lives of many people. Clearly, we occupy a position of public trust."

**Sarnia Hydro** has forecast a capital works budget of $2,568,000, which will carry debenture demands of $650,000 over the next five years. In presenting the budget, Secretary-Treasurer H. A. Luckins made it clear that the figure was tentative. It included the cost of a proposed service center, and will be sent to city hall to be included in the over-all five-year city budget.

**Milton Hydro** estimates its 1961-62 capital costs at $46,700. Extension and improvements to the electrical distribution system will account for the largest portion.

**Welland H.E.C.** proposes to grant an allowance of $50 to any domestic consumer changing to 100 amp. service which is now the minimum standard for new installations in Welland. The offer would be good for six months.

**Richmond Hill** and Galt are among the Hydro utilities which have announced they will lower their rates on rental flat rate water heaters to make up for the 3 per cent provincial sales tax. Tax regulations provide that the tax must show on the customer's bill.

**Terrace Bay Hydro** in the Northwestern Region is constructing a $53,700 office building. Total expenditures for 1961-62 are estimated at $86,500.

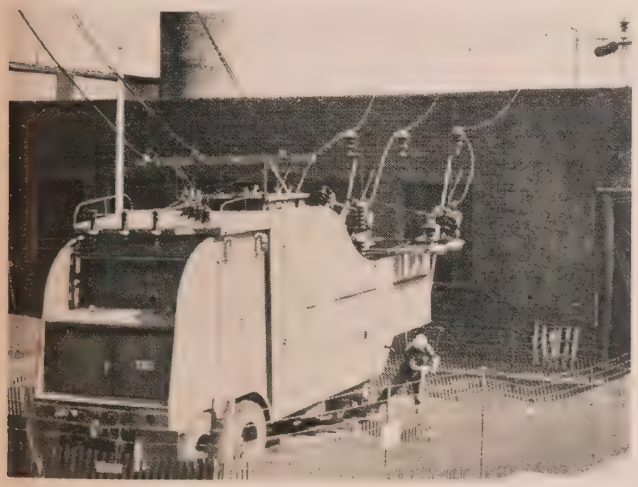
**H. John Murphy,** supervising engineer of Barrie Hydro, has been named general manager. He has been with the utility for almost 20 years. Mr. Murphy succeeds the late W. M. Salter.

**Rate adjustments** have recently been announced by the Hydro utilities of Newcastle, Swansea, Point Edward, Newboro and Perth. All are designed to increase revenue. ■



## Navigation Group Visits Niagara

Approximately 100 members of the Permanent International Association of Navigation Congresses, representing 17 countries, recently inspected Ontario Hydro power installations and other points of interest in the Niagara area. Interested in promoting the development of inland and maritime navigation, the association, comprising 52 member countries in all, had just concluded its 20th quadrennial congress in Baltimore, Md. Ontario Hydro Chairman W. Ross Strike received the visitors, who were accompanied by Major General Charles Holle of the United States, secretary-general of the association. From the left in the photograph: Major-General Holle; Lionel Cleaver, Great Britain; Mr. Strike and Isaac Kaplan, Israel. ■



## Mobile Unit Saves the Day

When lightning destroyed Brockville's No. 1 substation early last month, it left the entire business area without power. Emergency diesel equipment was pressed into action, but supplied only limited power suitable for cooking and lighting.

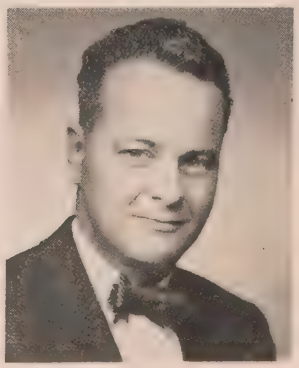
A hurried call to Ontario Hydro brought quick action, and that evening a 4,000 kva mobile substation arrived from the Haliburton area, hundreds of miles distant. Eight hours later the mobile unit was in operation, and it remained on the job for two weeks until temporary equipment could be installed. Appreciative P.U.C. Chairman Jack McLennan said "they did a tremendous job—we would have been lost without them." ■



## Relocation Progresses at Hawkesbury

Spino Construction Ltd. is well advanced on Phase I of the Hawkesbury relocation program—installation of an 8,500-foot-long, $500,000 combined trunk sewer along Main Street. The street is being ripped up piece by piece as the 60-inch line is laid. Installation will be completed before the flooding of the headpond of Quebec Hydro's Carillon power development, 12 miles downstream from Hawkesbury on the Ottawa River, early next year. The existing sewer system will be affected by the new river levels. ■

**Frank J. Dobson heads Ghana power project**



Ontario Hydro Engineer Frank J. Dobson, 44-year-old construction manager of the Lakeview thermal-electric development, will leave for Accra next month to head Ghana's massive Volta River Power Project.

Mr. Dobson was named to the post by Ghana President Kwame Nkrumah. He will be on loan from Ontario Hydro until the project is finished in four or five years' time.

Commenting on the appointment, Ontario Hydro Chairman W. Ross Strike said "Mr. Dobson is one of Hydro's outstanding construction engineers." He said "Ontario Hydro believes that development projects

of this nature deserve the fullest support by Canadians."

The Chairman revealed that President Nkrumah's wish for a Canadian to head the project had been relayed through Prime Minister Diefenbaker.

Mr. Dobson has almost 20 years of experience with Ontario Hydro. A University of Toronto graduate with a Bachelor of Applied Science degree in civil engineering, he joined the Commission in 1942. He was appointed construction manager at Lakeview in 1958.

The Volta River power scheme will be designed for an ultimate capacity of 768,000 kilowatts. Ghana's present electrical output is about 100,000 kw from diesel-electric generators.

In addition to directing construction, Mr. Dobson will be responsible for an associated rehabilitation program involving the displacement of 65,000 persons. ■



## Sweden Builds with Bombs in Mind

The threat of nuclear war has influenced the design of Sweden's latest hydro-electric power development. Some 400 feet high, the new Stora plant in west central Sweden has a capacity of 300,000 kilowatts, and is one of the world's largest rock-fill power dams. And the decision to utilize rock-fill instead of concrete was made mainly for military reasons—a dam of this type being considered more resistant to the shock of atomic explosions. ■

### Ontario Hydro and New York Request study of Niagara flow

Ontario Hydro and the Power Authority of the State of New York have asked the Canadian and United States governments to study the possibility of, and to make experiments in, increasing the diversion of water from the Niagara River for power production. The request has been referred to the International Joint Commission by the two governments.

The request was made after extensive tests indicated that additional water could be diverted without detracting from the beauty of the falls.

Regulations governing the flow over Niagara Falls, incorporated in the 1950 Niagara Treaty between Canada and the United States, were based largely upon a report made in 1929 on the preservation of the falls. With additional data now available, Ontario Hydro and P.A.S.N.Y. believe low-cost power could be generated from water now being wasted, without detracting from the scenic beauty of Niagara. ■

### Pole sitter enlists Aid of electricity




It doesn't really matter where you go in Ontario, you can live better electrically. The proof is in the photograph.

Paul Cote recently spent 50 days in a canoe lashed to a pair of cross-arms at the top of a 50-foot pole at the Totem Pole drive-in restaurant on Thorold Road, Stamford Township. He climbed aloft on the theory that he could attract business to the restaurant.

And electricity is the pole sitter's friend. A two-wire, 120-volt electric service installed by the Stamford P.U.C. provided him with power for shaving, entertainment and heat. Area Inspector W. H. Rudge, shown climbing up to check the installation, admits this was one of his more unusual jobs. ■

### Ontario Hydro beats the heat With ice-cooled concrete

Crushed ice helped Ontario Hydro beat the heat problem encountered this summer in constructing the walls of the reactor building at the Douglas Point Nuclear Power Station.

The thick walls of the circular reactor structure, which is 135 feet high and 130 feet in diameter, had to conform to rigid specifications calling for a leak-proof building. This posed a problem, as there is a greater danger of cracks developing when concrete is placed at high temperatures.

Crushed ice was the solution—about 1,100 cubic yards of concrete were mixed with the ice, and the crack-free condition of the walls attests to its effectiveness.

Initially, the mixing proportions were about two-thirds water and one-third crushed ice. Ultimately, as air temperatures increased, only ice was used. The technique may be used again at Douglas Point, and is expected to prove useful on future projects.

# OFF THE WIRES

It is no overstatement to say that electricity affects our everyday lives from the cradle to the grave, and, if present plans materialize, the last sound we hear may be electrical in origin. President John F. Kennedy has said he wants funds for a new household warning system now under development. The device, called NEAR (National Emergency Alarm Repeater), is a black box about the size of a cigarette package which plugs into a wall socket like any other electric appliance and emits a loud buzzing sound when activated. It is supposed to remain silent and unused unless an attack warning is sounded from defence headquarters.

NEAR was developed because of the impossibility of arranging outdoor siren systems audible to everyone indoors. It was decided to tie in with the house current because surveys showed that electric lines enter more American homes than any other form of utility. A similar scheme is being considered for Canada, but this is one appliance we would like to see go unused. And it wouldn't be much of a load builder in any event.

* * *

If there is a single Canadian motorist still unaware that a seat belt can mean the difference between life and death, then it is not the fault of the Canadian Highway Council. And the Council has come up with some very sobering information in its all-out campaign to promote the use of seat belts.

It states, unequivocally, that 1,000 of the people who died in traffic accidents in Canada last year would have survived had they worn seat belts. The C.H.S.C. further declares that one third of the traffic deaths in Canada could be prevented by their use, with an attendant reduction in the severity of injuries. Research indicates that risk of death or injury is five times greater for a person ejected from a car during an accident than for the person kept inside.

Reduction in prices of seat belts, and the installation of belt anchorages in all 1962 models of Canadian cars is aiding the Council in its drive to save lives through seat belts. While Canadian standards for automobile seat belts do not exist at the present time, they have priority and will appear soon. The C.H.S.A. believes that a seat belt should be able to lift a weight equal to that of the car—or about 4,000 pounds.

Give a life for Christmas is the Council's slogan for promoting seat belts as gifts. And come to think of it, they cost less than white wall tires, a set of flashy mirrors, seat covers or a comfortable motor rug. But, like an overcoat or a suit of long underwear, they have to be worn to do much good.

* * *

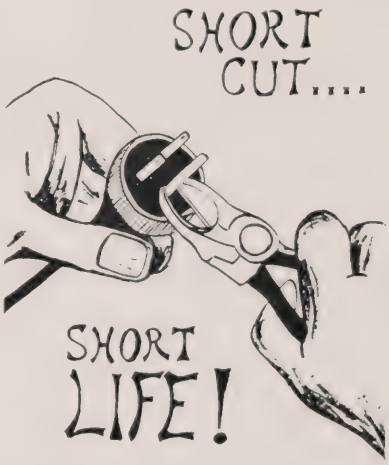
The Ontario Northland has a well-earned reputation for hospitality, and this is certainly understandable. We were intrigued by the following line on the program of the Northeastern O.M.E.A. - A.M.E.U. convention, held recently in Kapuskasing. It read: "Registration fee: $15 per male which includes one female at no additional cost."

* * *

Without vouching for his wisdom, we cannot help but admire the spirit displayed by a Fraser Valley service station operator in his squabble with the British Columbia Electric Company. It seems the battle started when the utility refused to service its trucks in the area at his station. "The company won't buy my products," the irate service man complained, "so I decided I would darn well stop buying theirs." Before the power was cut off, he installed his own diesel generator and rigged up a bicycle device to operate his gasoline pumps in the event of a breakdown.

* * *

When Ontario Hydro's Chief Electrical Inspector Keith Bellamy announced that new electrical installations made after June 1 in Ontario must have three-contact receptacles for use with three-prong plugs, he warned against cutting off the third prong so that the plug

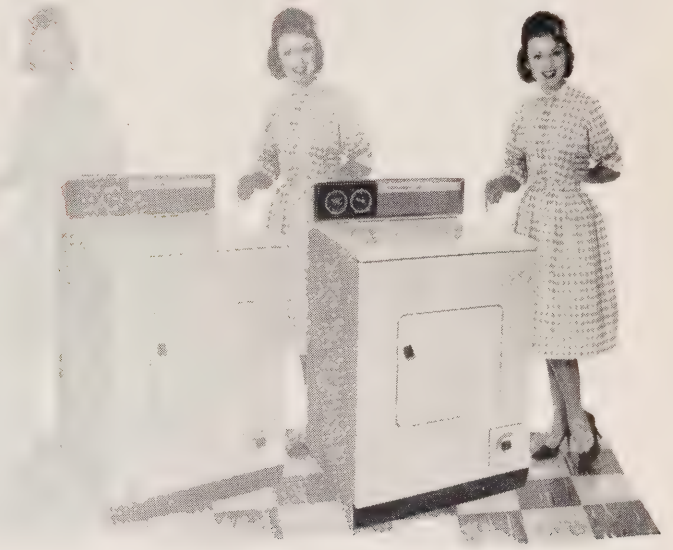



could be used in a two-contact, non-grounding receptacle. Electrical contractor W. J. Hamilton of Sault Ste. Marie illustrated this warning graphically to win first prize in a safety poster contest sponsored by the Safety Associations of Ontario. Both the poster and the new grounding regulations are significant contributions to the safe use of electricity. ■

# Just about the dreamiest thing that could happen to electric dryer buyers



**SUNSHINE SPECIAL**

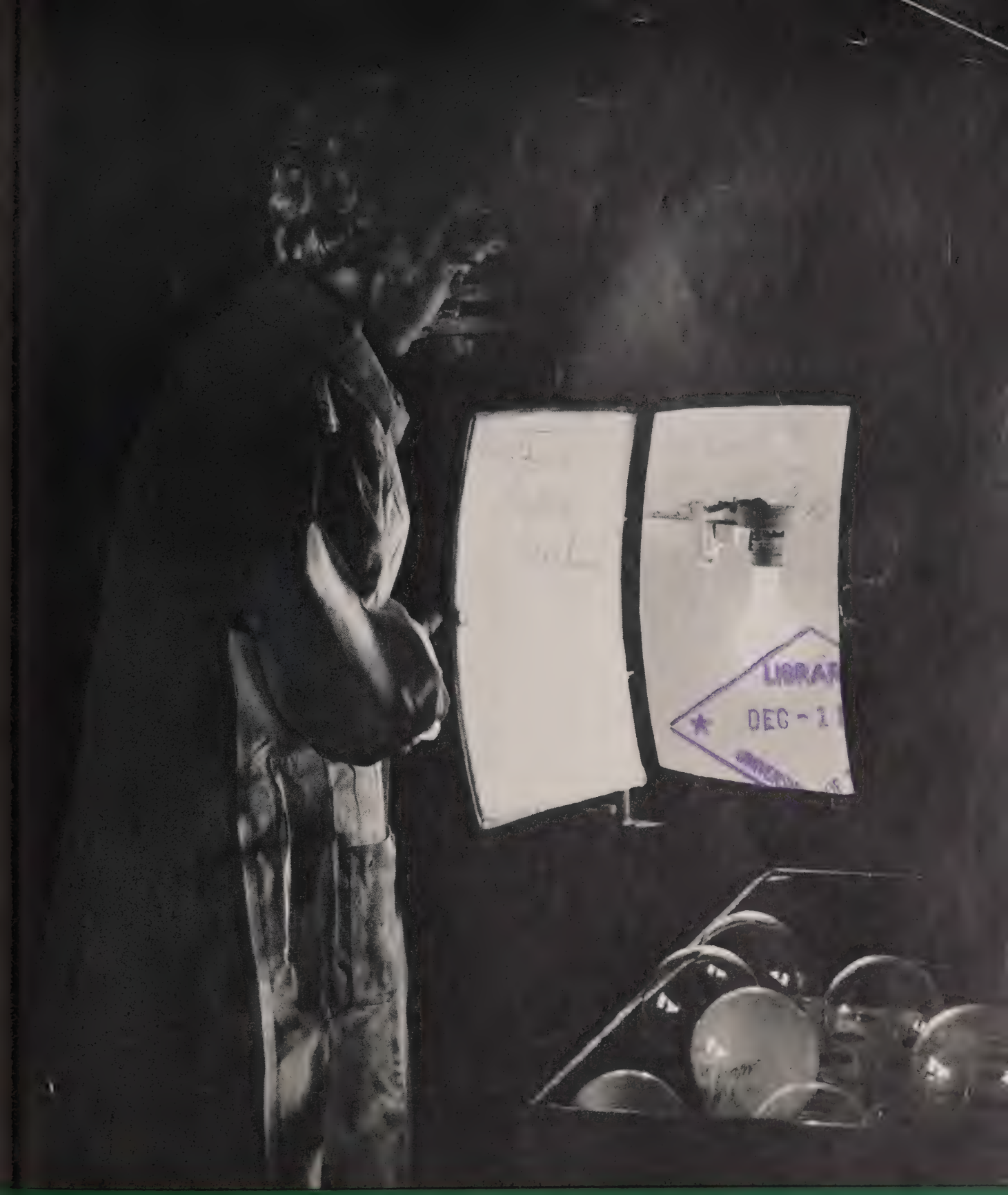


**A shining example of co-operation from Ontario Hydro, Municipal Electric Utilities, Manufacturers, Distributors and Dealers . . . already reflecting a promise of lasting benefits all 'round.**

To anyone still faced with old-fashioned washdays, please note that Sunshine Special with its attractive offer of a

FREE ELECTRIC BLANKET

expires Nov. 30, 1961.




RESEARCH PLAYS A VITAL ROLE AT ONTARIO HYDRO
SEE PAGE 10

ONTARIO · NOVEMBER · 1961

# HYDRO NEWS

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# ONTARIO HYDRO NEWS

NOVEMBER VOL. 48, NO. 11

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## ABOUT THIS MONTH'S COVER

COVER girls are few and far between in our line of endeavour, and we could not pass up this opportunity. Comely lab technician Joanne Chadwick is our cover subject. She is shown testing lamp output at the Commission's new W. P. Dobson Laboratory, in Metropolitan Toronto. Details of the Research Division's recent move are on page 10 of this issue.

A TALE OF TWO TOWNS

# This study in exaggeration reveals some interesting facts and figures

Last spring Ontario Hydro's Consumer Service Division launched a new study of utility operating costs and residential rate structures. The purpose was to compare electricity costs and rates in one community where customers "lived better electrically", with the rates and costs in a second municipality where electricity was available but not used liberally.

Consumer Service people created two mythical towns of the same size and with the same number of residents. The towns were given similar distribution systems, the opportunity to buy power at the same wholesale rates, and the same local controllable operating expenses.

Staff Writer Joan Allen, in reading the report, noted this but was more impressed by how the electrical loads in each town differed.

Both utilities faced stiff competition from natural gas, she noted. Why had one continued to build load and flourish in the face of competition, while the other faced a blighted future?

While recognizing that the two imaginary communities were envisioned by Consumer Service for the one purpose of drawing comparisons, Mrs. Allen did a little supposing, and, on Pages 2 and 3, suggests what sort of utility thinking could have led to the conditions mentioned. Turn the page for Mrs. Allen's account of her imaginary visit to both the town of Peppy Falls and the town of Slowpoke. It is in good fun and, perhaps, worth a chuckle or two.

Fortunately, no Ontario utility is likely to find any resemblance between itself and Slowpoke P.U.C. Peppy Falls P.U.C., on the other hand, does have its counterparts—in terms of enthusiasm and efficiency—in a number of the province's municipal utilities.

On Pages 4 and 5, the reader will find an outline of the Consumer Service Division's study. It discusses and explains the operating costs and rates in the two towns in an absorbing comparison.



# What makes Peppy Falls so peppy?

## A TALE OF TWO TOWNS

"Meeting will come to order." As members of Peppy Falls Public Utilities Commission settled into place, "Chubby" Jones, utility manager, burst into the room, waving a sheaf of mimeographed papers.

"Annual reports—hot off the press," he announced as he distributed them to Chairman Goodfellow, Mayor Gaylord, Commissioner Smiley and to the crowd of spectators in the board room.

"We've had a good year, boys," the Chairman commented as he checked the report. "And we'll be able to improve the revenue picture even more next year with a substantial number of electrically heated homes in town."

"Our advertising program must have produced some startling results," Commissioner Smiley, owner of the town's hardware store, exclaimed. "Why, advertising of water heaters alone took over $600."

"We got a tremendous return on our money," the general manager said. "We put in 153 1000/1000 water heaters last year." He chuckled. "And if you want to know the results of our Home-on-the-Electric-Range program. . . ."

"Try and stop him!" Mayor Gaylord commented.

". . . the dealers around town report that they sold a grand total of 72 electric ranges during September and October alone."

"It certainly seems to prove all that time we spent last winter organizing our promotional plans was time well spent," the Chairman said. "Who's got something to say about the door-to-door customer survey Tom Bright carried out for us?"

"I think that was about the smartest thing we've ever done," Commissioner Smiley said. "We obtained a lot of valuable information of course, but most important, our customers now know what their utility is trying to do for Peppy Falls. Quite a few people dropped into the hardware store to tell me what a fine job Tom did for us."

"Maybe Commissioner Smiley should take us all to lunch next week, out of sheer gratitude to our customer survey," Mayor Gaylord said to the ceiling.

And as Commissioner Smiley opened his mouth in startled protest, the Mayor added, "Wouldn't hurt him to spend some of the exorbitant profit he no doubt made on the extra sales."

"Meeting back to order," the Chairman said with a chuckle. "Does our display at the Peppy Falls Exhibition do the job it's supposed to do?"

"That cut-up hot water heater and poster display looked kind of sick besides the pretty girls Commissioner Smiley here hired for his hardware display," Mayor Gaylord said. "Couldn't we brighten our booth up a little next year. A few extra dollars might pay big dividends in getting our message across to the public."

"A good idea. We'll discuss it in detail later in the year," the Chairman said. "Now, does anyone have anything to say about the new uniforms for the metermen? If not, would someone like to make a motion to adjourn this meeting?"

"Excuse me, gentlemen," one of the spectators said, standing up. "May I have the floor for a minute?"

"Certainly, Mr. Gladboy," the Chairman said. "Certainly."

"On behalf of the people here tonight," Mr. Gladboy looked around for support, "and for just about everybody in town I guess, I'd like to thank the Peppy Falls Public Utilities Commission for the splendid job you've all done in our town. If it wasn't for the low Hydro rates and good service we get from our public utility, this town wouldn't be booming the way it is today. Why, I can remember the time when . . . "

After a whispered consultation with his wife, Mr. Gladboy said, "well . . . uh . . . anyways, thanks for doing a good job."

"Thank *you*, Mr. Gladboy," the Chairman said. "I know I can say, on behalf of the Commission, that we really appreciate your coming here tonight and saying that. With people like you taking an interest in what we're doing, we all try a little harder to do the right thing for Peppy Falls. Thank you.

"I move this meeting be adjourned."

# Why is Slowpoke so slow?



"Meeting will come to order." Slowpoke Public Utilities Commissioners looked at each other unhappily as they settled into place. Then Chairman Black, Mayor Sobersides, Commissioner Moody and Mortimer Glum, the general manager, stared at the annual reports on the table.

"Maybe this one should have a black border," the general manager said, breaking the silence.

"What I want to know," Mayor Sobersides said, "is why we can't get our rates down to the level where people will buy more electrical appliances. The prices we're charging for power now, no wonder there's not a single electric water heater or electric range in town."

"We've got to keep our rates high so we won't go broke," Commissioner Moody reminded him.

There was a long silence.

"Can we tighten our belts any more?" the Chairman asked.

"Well . . ." the Mayor said, considering the report, "the $500 we spent on advertising seems to have been a complete waste. Why did we allot so much to advertising anyway?"

"Somebody suggested it three or four years ago," Mortimer Glum recalled.

"We had an advertisement in the Slowpoke News about water heaters, and we didn't place a single one all year," Mayor Sobersides continued. "I suggest we drop the whole $500 item and not bother with any advertisements at all."

"Or maybe we should increase our advertising budget," Chairman Black said. "Maybe if we put on all sorts of promotions like Peppy Falls P.U.C. across the highway, we'd get as good returns as they seem to."

"Bosh. Utter rot," the Mayor snorted.

"What about a door-to-door customer survey?" the Chairman asked.

"Complete waste of money," Commissioner Moody said. "We've got a pretty good idea who has electric ranges and refrigerators here in town."

"Nobody, that's who," Mortimer Glum said. "Who needs to knock on doors to figure that out?"

"No customer survey," Chairman Black said. "Now, what about our booth at the Slowpoke Fall Fair? Should we bother with it next year?"

"If we use last year's posters, it won't cost us very much," Mayor Sobersides said. "But we don't need to have somebody standing around in it. None of the public ever asks any questions."

"Excuse me, Mayor Sobersides," the Chairman broke in. "I have a letter right here in my hand from a customer—a Mrs. Umbrage, I believe, who asks a lot of questions. I think I'd better read the letter to you. 'Slowpoke Public Utility Commission, etc. Gentlemen:

" 'Would you kindly tell me why my Hydro bill is so high for the few light bulbs we have in the house?' "

"What does she mean by . . . " the Mayor interrupted.

"Let me finish the letter," the Chairman said.

" 'I think the rates are disgraceful. My sister—she lives over in Peppy Falls—only pays a couple of dollars a month more for her Hydro bill than I do. And she has an electric range *and* an electric refrigerator *and* an electric hot water heater *and* an automatic electric washer *and* an electric dryer *and* an electric DISHWASHER. I don't have any of those things.

" 'I think the people of Slowpoke are being cheated out of a better way of living because the Hydro rates are so high. We can't afford to run all the wonderful new electrical appliances on the market these days.' "

The Chairman stared at the annual report on the table in front of him.

"I move this meeting be adjourned."

A TALE OF TWO TOWNS

# Some remarkable differences

this
Consumer Service study
has broad interest
for all

## A TALE OF TWO TOWNS

Peppy Falls and Slowpoke, somewhat exaggerated to point up their differences more vividly, are the electrically-equipped and gas-equipped communities which Hydro's Consumer Service Division created in a study of utility operating costs and residential sales.

For simplicity's sake, certain assumptions had to be made at the beginning. Consumer Service assumed that both Peppy Falls and Slowpoke P.U.C.s have debenture charges on debts equivalent to 20 per cent of their systems' costs. In both cases, their residential rates must be adjusted so that they can meet their financial obligations.

It has also been assumed that Peppy Falls and Slowpoke each has exactly 1,000 residential customers, and that controllable expenses in both municipalities work out to $20 per customer per year. Controllable expenses are the total operating expenses of a utility less the cost of purchased power and less the annual carrying charges on plant including sinking fund and interest on debenture debt and depreciation.

Under cost contracts with Ontario Hydro, cost of power to Slowpoke P.U.C. is estimated to be $40 per kilowatt per year. Reflecting a higher load factor, the cost of power to Peppy Falls P.U.C. is estimated at $41.60 per kilowatt. It is assumed that the towns are supplied from similar facilities.

Because all homes in Peppy Falls meet Bronze Medallion standards, the average metered use of electricity per customer has been estimated at 450 kilowatt-hours per month, plus 400 kilowatt-hours for a flat-rate water heater of 1000/1000 watts. The average diversified demand per customer is estimated at two kilowatts, making an average monthly peak demand of 2,000 kilowatts for Peppy Falls P.U.C.

Slowpoke P.U.C. customers use electricity only for lighting and small appliances, with the average metered use of electric power per customer estimated at 200 kilowatt-hours per month. In Slowpoke the average diversified demand per customer is 0.6 kilowatts, indicating an average monthly peak demand of 600 kilowatts for Slowpoke P.U.C.

The original cost of the distribution system in Peppy Falls was $200,000, and in Slowpoke $180,000. The slightly higher cost in Peppy Falls results from the additional transformer and line capacity for the town's extra electrical equipment and loads. The debenture debt is assumed to be 20 per cent of the original system cost in both towns.

Working on these assumptions, the probable cost per year for the two utilities can be worked out and compared.

| | Peppy Falls | | Slowpoke | |
|---|---|---|---|---|
| *Carrying charges on 6½% debentures for 20% of plant value | $ 3,630 | (on $40,000) | $ 3,267 | (on $36,000) |
| Controllable expenses | | | | |
| $20 per customer per year | 20,000 | | 20,000 | |
| plus $2 per customer per year in Peppy Falls and $0.50 per customer per year in Slowpoke for promotion of energy sales | 2,000 | | 500 | |
| **Cost of power | | | | |
| @ $40 per kw per year in Slowpoke | | | 24,000 | (on utility average monthly peak demand of 600 kw) |
| @ $41.60 per kw per year in Peppy Falls | 83,200 | (on utility average monthly peak demand of 2000 kw) | | |
| Depreciation of 3% per year on new system | 6,000 | | 5,400 | |
| Total costs | $114,830 | | $53,167 | |

*Payments work out to about nine per cent annually because debt is amortized over 20 years.

**The load factor of the 2000 kw load in Peppy Falls would be approximately 10 per cent higher than that of Slowpoke, and the cost of power would vary accordingly.

To cover annual expenses of $114,830, and to allow a 10 per cent net income, Peppy Falls requires revenue totalling $127,858. Revenue from flat rate water heaters, at 35 cents per 100 watts of billing demand, will bring in $33,600 a year from 1000 water heaters. The rest of the revenue, $94,258, must be obtained from metered energy. Therefore the average cost of power to the customer works out to 1.25 cents per kilowatt-hour.

Slowpoke P.U.C. needs a total revenue of $59,074 to obtain a 10 per cent net income. The average cost of power to the customer is, therefore, 2.46 cents per kilowatt-hour.

| | Peppy Falls | Slowpoke |
|---|---|---|
| Total revenue required | $ 127,858 | $ 59,074 |
| Revenue from F.R.W.H. | 33,600 | Nil |
| Revenue to be obtained from metered energy | $ 94,258 | $ 59,074 |
| Metered energy sold for year | 5,400,000 kwhr | 2,400,000 kwhr |
| Water heater energy sold for year | 4,800,000 kwhr | Nil |
| Total energy sales | 10,200,000 kwhr | 2,400,000 kwhr |
| Average cost per kwhr | 1.25c | 2.46c |

Appropriate rate structure to obtain revenue required

| Peppy Falls | | Slowpoke |
|---|---|---|
| 4.4c | (first 50 kwhrs) | 4.8c |
| 2.2c | (next 200 kwhrs) | 2.4c |
| 1.2c | (over 250 kwhrs) | 1.5c |

A three-block residential rate structure of 4.4 - 2.2 - 1.2 will give Peppy Falls P.U.C. the revenue required from metered energy. Because of the wide use of major electrical appliances in the town, approximately 11 per cent of the kilowatt-hours used are paid for at the first rate, 40 per cent at the second, and 49 per cent at the third.

Slowpoke P.U.C. must establish a residential rate structure of 4.8 - 2.4 - 1.5 cents to obtain almost all the revenue required. Since electricity is used only for lighting and small appliances, approximately 25 per cent of the kilowatt-hours used is paid for at the first rate, 50 per cent at the second, and 25 per cent at the third. ■



# OLD KING COAL

*A multi-million dollar coal-handling system will feed the hungry fires at the Lakeview Generating Station*

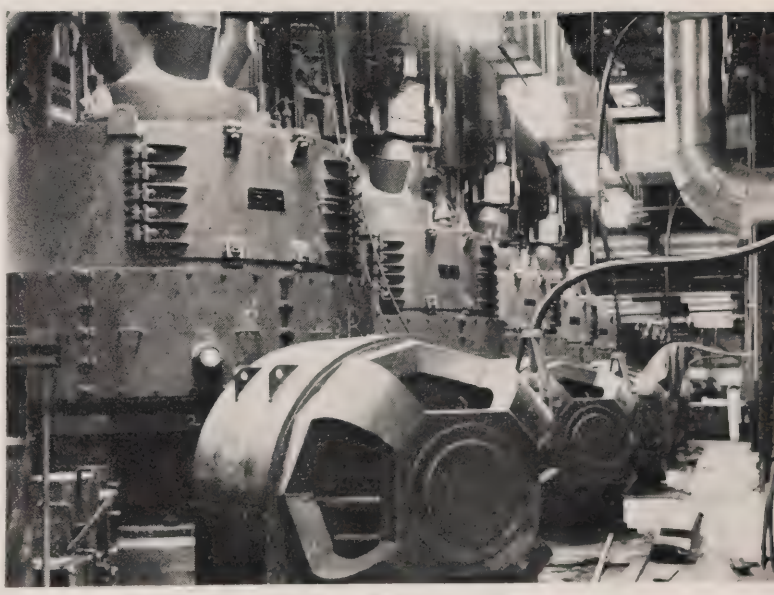
Coal is king at Lakeview, life-blood of Ontario Hydro's giant thermal-electric power plant on the western outskirts of Metropolitan Toronto.

A humming, 300,000-kilowatt generator, first of six planned for the station, is now being commissioned and has already contributed some power to the Southern Ontario grid. And coal is the initial driving force behind that generator. Pulverized coal, about 110 tons of it an hour at peak load, will fire the furnace, producing steam to spin the turbine blades.

Everything is on a super scale at the Lakeview plant, and the $4,500,000 coal-handling facilities are no exception. A 4,165-foot conveyor belt system whisks coal ashore from big lake carriers to a huge outdoor stockpile. Reclaimed later from the pile, the coal is fed to the furnace in the form of a fine dust.

Ultimately, when all six units are producing, there could be a coal stockpile at summer's end of up to two million tons. A quarter of a million tons were stockpiled this summer.

At the heart of the coal-handling system is a dock extending from a long rock causeway. Combined, they push 2,000 feet into Lake Ontario. The self-unloading lake carriers discharge their coal, through hoppers, onto a conveyor enclosed in a tunnel running the length of the dock. It is carried from here to the transfer house, almost half a mile distant, at up to 2,000 tons an hour. And the coal-handling



*Massive stacking-out tower, far left, is shown as it begins to spread coal from the first lake carrier to visit Lakeview. Boom is 100 feet high. Battery of pulverizers, above, reduces coal to a fine powder before it is blown into unit one furnace.*



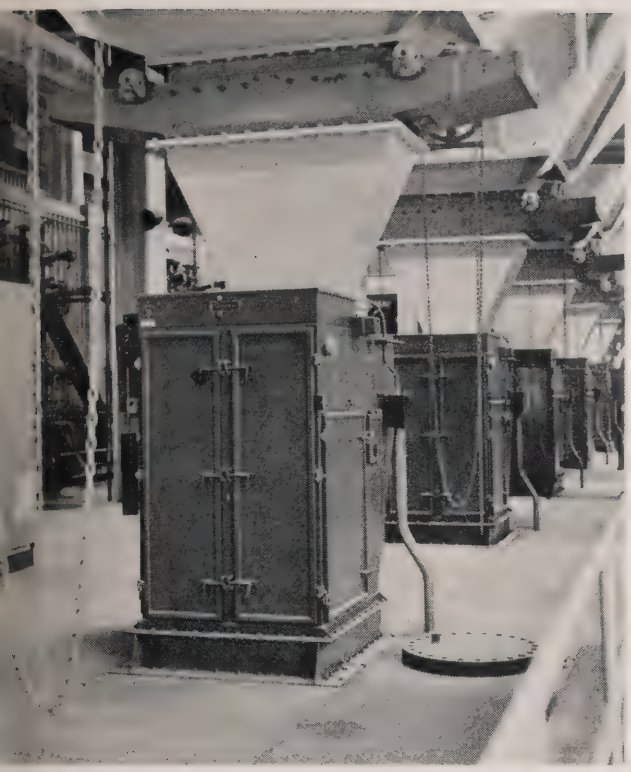
system has been designed for duplication when units five and six of the Lakeview plant come into service in the mid-sixties.

From the dock, the conveyor emerges on to a steel trestle which carries it along the causeway, over the intake channel and into the transfer house. Here a suspended magnet removes any tramp iron that might be present, and the coal is switched to another conveyor for the trip to the sample house, where it is tested for quality.

Then, if the coal is to be stock-piled, it is conveyed to a massive stacking-out tower, where a giant boom, 100 feet above the ground, spreads the coal in a wide arc on to the stockpile. It swings through 240 degrees, and the tip can be lifted about 60 degrees from the horizontal.

Tractor scrapers help the boom spread the coal. These 50-ton monsters trundle 30 tons at a gulp, spreading and levelling it in layers seven or eight inches deep. Their huge weight tightly compacts the coal, excluding air and preventing spontaneous combustion. Stockpiled coal is reclaimed in winter by bulldozers and tractor scrapers which dump it into hoppers feeding conveyors located in a reclaim tunnel below ground level.

But the Lakeview system is designed to allow coal to bypass the stockpile. In this event, it is routed directly from the sample house to the crushers. Here it is reduced to pieces less than one inch in size. Further along, in the powerhouse, a tripping machine siphons the coal into the six sections of unit one's bunker. The coal in each section is chuted down to weigh scales and passed into a pulverizer, where it is reduced to a fine dust. Four coal tubes lead from each pulverizer to the furnace, making a total of 24 coal inlets to each furnace. ■



*Lake carrier, far left, discharges coal into hopper at Lakeview G.S. dock. Photo, left, shows weigh scales through which coal is chuted to pulverizers and on to unit one's furnace. Magnitude of coal-handling system is indicated in aerial view, below. Conveyor emerges from dock and is carried on trestles to transfer house. Stockpiled coal is conveyed to plant through reclaim tunnel.*



# SCIENCE ON THE MOVE










*Ontario Hydro's impressive new research laboratory (top) is situated at the A. W. Manby Service Centre in Metropolitan Toronto. Bright, spacious library (above) stocks 1,500 books and 2,500 periodicals. View of meter room (right above) shows men at work on meter calibration as part of job of maintaining electrical standards. Researcher (right) in new soils lab was hard at work despite moving upheaval.*

## *Ontario Hydro's famous research team moves into new quarters*

BACK in the early part of this century, when Ontario Hydro was just a youngster in the new world of electricity, young Henry Crerar was brought into the Commission as illuminations engineer.

In 1912 he set up shop in the basement of the Strachan Avenue transformer station, in Toronto, and one employee was assigned to assist him. When he left the Commission for war service in 1914, Mr. Crerar could scarcely have known that this seed would grow into a 300-man team of engineers, chemists and technicians—Ontario Hydro's vital and renowned Research Division.

In its fledgling years, the group moved into the Commission's new service building adjacent to the transformer station. Soon it overflowed into other sections, and eventually occupied the whole building. And this was its home for half a century. Last month the Research Division moved into handsome new laboratories on a nine-acre site at the A. W. Manby Service Centre in Etobicoke.

Cramped and aging, the old building stood in the way of progress both from within and without. Its facilities were inadequate to accommodate the greatly increased scope of research activities, and it stood directly in the path of Metropolitan Toronto's Gardiner Expressway. Vacated now, its ancient walls will fall prey to the wrecker's hammer.

In strong contrast to the old laboratory, the new centre has been specifically designed for research. Built at a cost of $4,000,000, the building has 170,000 square feet of floor space, compared with 80,000 square feet at Strachan Avenue. While other personnel will occupy a section of the building, there will be considerably more space for research. And facilities for testing and developing work are also much improved. It is indicative of the building's specialized nature that it contains almost nine miles of pipes. Electricity is the heating medium.

Moving was a major operation involving the transfer of equipment and instruments valued at about $1,000,000, as well as tons of furniture, filing cabinets, books and papers. All are now housed in the new H-shaped structure, two storeys high with one three-storey wing. A high voltage testing laboratory will be contained in a separate building now under construction.

The centre is to be known as the Ontario Hydro W. P. Dobson Research Laboratory in recognition of the work of Dr. W. P. Dobson, a man who played a major role in the development of the Commission's research program. Joining the Research Division in the early years, he established the Approvals Laboratory in 1919, and served as director of research for many years.



*Model room in new laboratory (above) houses equipment used to turn out host of equipment items for research projects.*

Research at Ontario Hydro has one primary objective—to help minimize the cost of supplying electric power to the people of Ontario. Difficult technical problems in design, construction, operation, maintenance and customer service are its regular diet.

The Commission's research team has made a name for itself in many fields, and has all sorts of firsts to its credit. Its members have made an outstanding contribution to the technology of cement and concrete, they pioneered safe testing of electrical equipment, improved line-grounding methods, and are contributing towards the science of long-distance transmission.

The researchers have also developed such outstanding items as:

The "dumb-bell" vibration damper—designed to overcome fatigue failures in transmission line conductors.

A portable bolometer to measure infra-red radiation from line joints. Measurements indicate deterioration due to excessive operating temperatures.

The linascope, an instrument for locating short circuits in power lines.

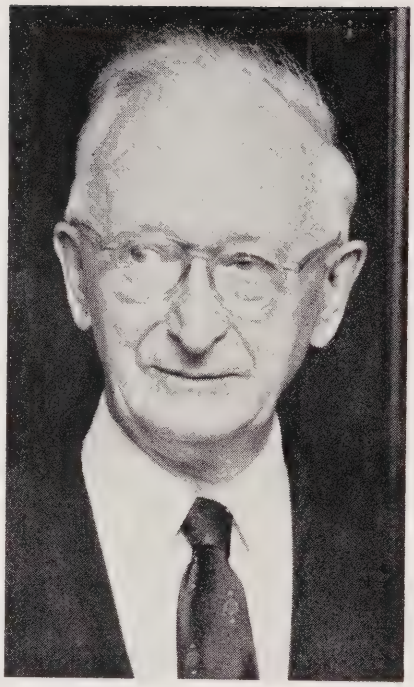
But much of their work involves the routine testing of paints, lubricants, poles, insulating oils and other material and equipment purchased by the Commission in large quantities. The researchers probe performance records, evaluate competitive products, seek out deficiencies and help establish rigid buying specifications.

Important savings have also resulted from their studies of quality control and the economic scheduling of steam and hydro-electric power. Their work in such fields as pole preservation, corrosion, and the cavitation of turbine runners has pared large sums from the Commission's cost of doing business. ■

"Man of Science"

# WILLIAM PERCY DOBSON

His name identifies Ontario Hydro's impressive new research laboratory



Only rarely does Ontario Hydro name a great project after one of its own leaders, but this practice seemed particularly appropriate when it came to naming the impressive new research centre. William Percy Dobson was an obvious choice.

Known to many as Ontario Hydro's "Man of Science", Dr. Dobson is richly deserving of the honor. From a nucleus of seven engineers and technicians, he built the Research Division into a vital 300-man team, hugely benefiting Ontario Hydro and the electrical industry in general.

And over the years Dr. Dobson has become widely recognized beyond the bounds of Ontario Hydro. Honorary doctorates and an impressive list of honorary memberships in engineering and other technical organizations attest to his international reputation.

Born in the tiny Ontario community of Ballinafad, near Georgetown, Dr. Dobson attended Harriston Collegiate Institute before moving on to the University of Toronto. He graduated with a Bachelor of Science degree in electrical engineering in 1911. After a short stint with Toronto Hydro he won a research fellowship and spent two years probing the mysteries of high voltage transmission.

Dr. Dobson joined Ontario Hydro in 1914 as head of research, a post then known as Laboratory Engineer. A year later he won his Masters degree and set about the task of reorganizing the Division and increasing the scope of its activities.

In 1919, Dr. Dobson established the Approvals Laboratory, and, as its head, he became essentially the originator of safety testing of electrical appliances in Canada. He was appointed liaison officer between Ontario Hydro and Atomic Energy of Canada Ltd., in 1952.

Dr. Dobson retired from Ontario Hydro in 1955, but this was by no means the end of his scientific work. At the present time he is a member of the Canadian Standards Association's board of directors, and he is Chairman of the C.S.A. Testing Laboratories.

During his career with Ontario Hydro, Dr. Dobson attended many international conferences and published numerous articles on transmission, electrical theory and engineering standardization. He was a member of the University of Toronto Senate from 1940 to 1948, and on the Science and Engineering Advisory Council at Queen's University from 1950 to 1954.

Queen's awarded him a Doctorate of Science in 1951, and early this year the University of Toronto conferred on him the degree of Doctor of Laws. ■

*Niagara district utilities and Ontario Hydro sponsor*

# ELECTRICAL EXHIBITION TAILORED TO INDUSTRY

AN EXPERIMENT in communications aimed at acquainting senior management with the latest industrial applications of electricity has been voted an outstanding success.

The Industrial Electrical Exhibition, held recently at Niagara Falls, was the first show of its kind in Ontario. Sponsored jointly by the 14 local municipal electrical utilities in the Niagara area and Ontario Hydro, the show attracted some 25 manufacturers, who exhibited their latest products, including lighting, heating and communications equipment.

Executives, owners, engineers, production specialists, plant superintendents and purchasing agents, together with students in electrical courses and their instructors, made up the audience. Several working models added to the interest, and technical representatives were on hand to explain the specifications, principles and applications of their equipment.

Among the most fascinating features of the show was a demonstration of electrosonic cleaning. Electrical energy was converted to high frequency sound waves which, travelling through a liquid cleaning agent, set up a scrubbing action to blast foreign material from metals, plastics, ceramics and glass. Spectators were able to have their car keys or rings cleaned by this process.

Another interesting feature was the Electrical Bureau of Canada's exhibit of plant power and plant power methods. This was designed to acquaint management with the value of the plant power seminars which are sponsored by municipal electrical utilities and Ontario Hydro throughout the province.

Also on display were plant, office and floodlighting fixtures, telecommunication equipment, bus duct systems, motors, industrial sound systems, electric welding equipment, data collection and sequencing control logic systems, and electric heating units, including infra-red equipment.

Commenting on the exhibition, R. C. Dickinson, Canadian General Electric Company, expressed the feeling of several exhibitors when he said:

"Its much harder for a manufacturer to create interest in his own show than in an exhibition such as this." He thought this was the type of show which should be put on "time and time again". ■



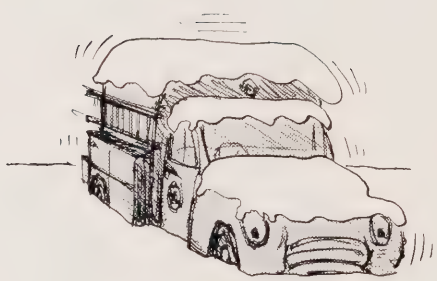
*Electronic document transcript equipment on display at electrical exhibition is explained to F. A. Buckland, left, of Ferranti-Packard Electric, and T. William Casson, L. A. Schwindt Co.*



*This electric truck will carry two men and equipment to plant fire. R. A. Brooks, Ontario Hydro, demonstrates truck to R. Bray, Niagara Falls H.E.C., left, and J. P. Tarect, Burlec Sales.*

# BABY IT'S COLD OUTSIDE

*. . . but Ontario Hydro's vehicle people are suggesting that the need for indoor heated parking facilities may be based on archaic thinking —the passive acceptance of past practices.*



by Max Lambert

As WINTER rolls around, millions of trucks, autos and other mechanized transport head for the protective warmth of heated garages.

But there is an increasing number of vehicles that will be left out in the cold—and come to no harm. Among them are 80 per cent of Ontario Hydro's fleet of 1,500.

Last year these vehicles logged millions of miles, met all kinds of weather in all parts of the province, and survived very nicely without a garage.

Don McKenzie, transport and work equipment manager at the A. W. Manby Service Centre, puts it this way: "We're not convinced of the economies of heated indoor parking and can't see the justification for it under most circumstances." He emphasizes, of course, that he is referring to heated parking space as opposed to the limited area necessary for repair and maintenance.

Don looks on heated garage space as a big investment and says "we can't see much return on the money." Ontario Hydro's cars and trucks that do spend the winter indoors, do so because there happens to be facilities for them.

Don McKenzie says easy winter starting and paint protection are advanced as arguments for heated indoor storage. Neither stands up too well. And research has turned up at least one good reason why heated garages can be a definite liability.

A warm motor is not necessarily the major factor in easy cold weather starting. Top engine condition will help more than anything to turn motors on cold mornings.

Warmth helps of course, but a block heater and battery warmer do the job effectively and inexpensively. All over Ontario's northland, vehicles are equipped with block heaters, and though many are parked outdoors overnight in sub zero temperatures, starting is little problem.

As far as paint protection is

*Stealing a page from the homeowners book, Scarborough Township built this giant "truck port" for its garbage fleet. Built at a fraction of the cost of a conventional garage, it is working out well.*



concerned, there are many agents eating away at glossy paintwork—sunlight, dew, rain, industrial fumes, atmospheric dust, motor exhaust gases. Many of these are at their worst during daylight hours when most vehicles are parked outdoors. Overnight parking in garages, then, is unlikely to stop the worst of the damage.

Hydro research workers who've probed this problem believe regular cold water washing and occasional use of automotive cleaners and waxes will provide ample paintwork protection.

Don McKenzie doesn't have a garage at his home, and admits he doesn't look after the paint on his auto as well as he should. "But even if I had to get the car repainted every three or four years, it would be a lot cheaper than handing over, say $2,500, for a garage."

The big argument against heated garages is that they actually accelerate vehicle body corrosion. Says Alex DeMaio, manager of the service centre: "Garages act like a bunsen burner on a chemical reaction—they speed up the process."

Corrosive tests last winter, by a Toronto firm, showed overnight storage of vehicles in a heated garage markedly increased the corrosive action of de-icing salts. This is of particular significance to fleet owners who operate maintenance and storage facilities.

Bern Holmes, a structural researcher with Ontario Hydro, says water is necessary for body corrosion, and he goes on to explain that when a car or truck enters a closed, heated garage, snow and ice packed on the vehicle begin to melt.

Humidity in the garage rises gradually until there is no further moisture evaporation. From then on there is free water around to feed the corrosive action of the de-icing salts. Outdoors, where there is low humidity, water either evaporates or freezes.

Of course, a garage, heated or unheated, does mean a vehicle won't be coated with ice or snow during a storm. But, on the other hand, drifts against garage doors have to be moved. A vehicle parked outdoors close to the street will need to be cleared of snow and ice, but, once free, it can be driven off immediately.

Alex DeMaio suggests garages may have become a habit with people, companies, utilities—perhaps even a status symbol, and he thinks they may disappear someday. "If companies or utilities expand and need more space, they should consider parking their vehicles outside and converting the garage to some other use," he reasons.

Mr. DeMaio believes that car or truck-ports offer advantages—the lesser of two evils is the way he puts it—if a need is felt to house the fleet. "A truck-port is a whole lot cheaper than a garage," he says.

He cites a big truck-port built by Scarboro Township last year to house its 42 heavy-duty garbage trucks. The facility has been a tremendous success, he claims, and was built for $30,000—a fraction of the cost of a regular garage. ■

# LOAD BUILDING -NORTHERN STYLE

by ADRI BOUDEWYN

*Tea parties are not the thing to interest nickel miners in electrical living*





*Sudbury Hydro Chairman Wes Edwards explains how he lured tired miners from their easy chairs.*

THE local newspaper called it a "good example of what Hydro means with its catchy ditty 'Live Better Electrically'." Radio and television joined the chorus in praise of Sudbury's Hydro Home Show and the sellout crowds it attracted during a three-day stand.

But the most interesting story took place behind the scenes, where the thoughtful planning of Wes Edwards, strapping six-foot Chairman of the Sudbury Hydro-Electric Commission, turned his knowledge of the community into a successful load-building extravaganza.

In Sudbury, some 20,000 men descend the mine shafts around the clock, seven days a week, and they have made the city of towering smoke stacks what it is today—a lusty, chest-thumping and rather raffish melting pot of both men and ore.

The city—a brew of some 32 nationalities attracted by the top wages paid by the mining and smelting industries—sits in an oyster-shaped cup amid black hills of rock, tailings and stunted wood growth. But no spectre of ghostdom haunts this blatantly prosperous mining centre.

Sudbury has, according to a recent census, the youngest population in the nation, with an average age of 26.2 years. Because of the many nationalities living side by side, its people adopt a broad viewpoint concerning the others' customs, traditions and




*A "Meet Ross Strike" dinner preceded the Home Show at which the Ontario Hydro Chairman was introduced to local dealers, contractors and utility officials. He is shown, far left photo, with TV's Peter Whittall, centre, and Brian Sinclair, right, a manufacturer's representative. Photo, left, shows section of packed auditorium.*

idiosyncrasies. Sudburians are also active, outgoing people with a need for entertainment and amusement during off hours.

It was this feature about life in Sudbury that started Wes Edwards thinking in terms of a home show. But, with his flair for showmanship, Wes knew that he would have to deviate from usual load-building promotions if he was to interest the mining population.

Twice president of the Canadian Legion's Sudbury Branch (No. 76), and the chairman of this year's Red Feather campaign in that city, Wes heads the load-building committee in the O.M.E.A's District 9. The many activities of this young, hard-knuckled war veteran have given him a thorough understanding of the habits and needs of the Sudbury miner. He has been in demand to head Salvation Army fund drives and Red Feather campaigns for a number of years. Three years ago he was elected to the Sudbury H.E.C., and a year later he was named chairman.

How he went about getting Sudbury's load-building program off the ground is a story in itself. Initial inquiries revealed that a conventional home cooking class for Sudbury housewives would not suffice. Needed was a lively, two-hour program that would entertain both male and female.

The Sudbury commission sought and promptly received the support of the Capreol, Espanola, Massey and Coniston utilities. And, in subsequent weeks, Wes called in sales representatives from Ontario Hydro, appliance dealers and manufacturers prominent in the city. Together they agreed to center the show around the home.

In the months ahead, Wes' committee, comprising hard-working commissioners and representatives of participating groups, arranged for: a "Meet Ross Strike Dinner," where local electrical dealers and officials would meet the Ontario Hydro chairman; erected advertising posters at all district fairs; were provided with the services of a home economist to narrate a film on interior decorating.

Manufacturers obliged with 10 free dryers, one to be given away every hour of the show. Ontario Hydro helped out with the services of home economists Lois Hurst and Gwynne Reed, and supplied 20 electrical blankets for prize draws. Appliance dealers and electrical contractors advertised the show in their display windows. Some 5,000 bottle caps and an equal number of measuring spoons inscribed with the medallion home crest were used as giveaways at the doors.

Television's "Mr. Fix-It", Peter Whittal, was used as bait to lure hard-working miners from their TV



*A team effort, Sudbury Hydro Home Show enjoyed the active support of all participants. This hard-working trio includes, from the left, Commissioner E. C. Dash, General Manager Hugh MacKinnon and Mayor W. R. Edgar. Dealers, manufacturers and other local sales allies lent valuable assistance.*



*All paths led to the Legion Hall, where the Hydro Home Show drew capacity crowds at five performances held in three days.*

chairs and workshops. He gave five 20-minute, man-to-man talks on the art of do-it-yourself carpentry.

For chairman Edwards it was familiar work. He had called on Sudburians numerous times for their support, both morally and monetarily.

The show was held at the Legion Hall, and it was a sellout. Capacity crowds totalling 3,182 attended the five performances over a three-day period. While the wives learned the ABC's of braising a spicy steak, their husbands picked up a few new tricks from Mr. Whittall. One young, expectant mother stayed until the end to hear the results of a dryer draw, then rushed to hospital to have her baby.

The purpose of Sudbury's campaign?

"Six months from now our sales volume will show an increase of 10 to 15 per cent," Wes Edwards predicts. "But this is only the start of our load-building.

"We've built Sudbury Hydro on promotion, selling and service. At sports events, such as curling, we make sure electrical appliances are among the major prizes.

"There was good reason for the laundry demonstrations at the home show. They coincided with Ontario Hydro's Sunshine Special, the dryer promotion that started the day following the show.

"Our Meet Ross Strike Dinner had electrical dealers bubbling with enthusiasm. It made them feel part of the campaign."

And the live-wire leadership in load-building offered by the Sudbury Commission is getting results. The number of medallion homes in the city jumped from two in 1959 to 45 homes up to October of this year, with six additional dwellings still under construction.

The utility's electric water heater campaign started in February of 1959. That year 385 tanks were rented out. By October of this year the total stood at 2,086 tanks. During the same three-year period the gas companies rented out a total of 600 tanks.

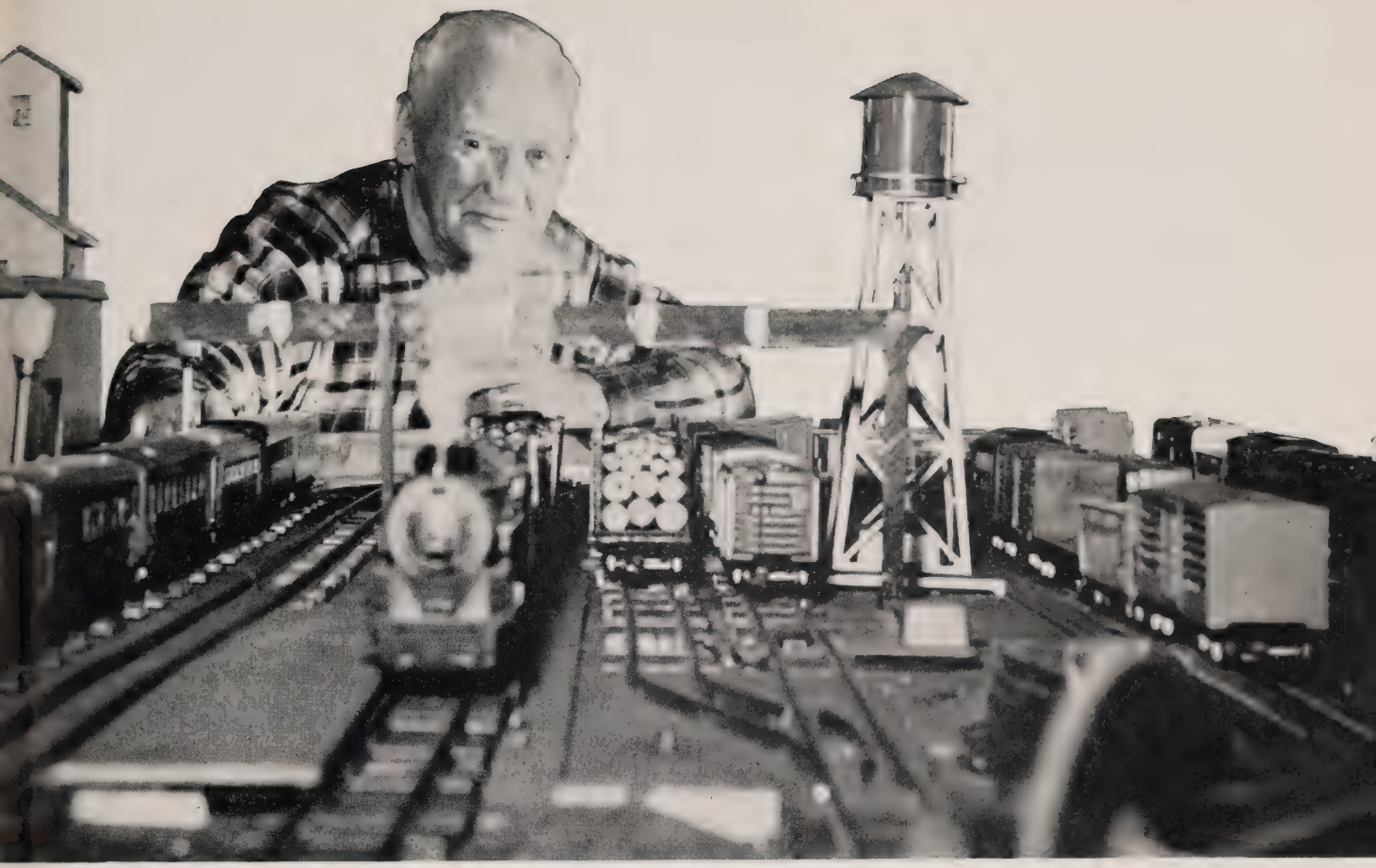
The total cost of the Hydro Home Show was $7,500, shared by the five participating municipalities and Ontario Hydro on a per capita basis. Of this, about a third went toward local advertising, much of it allotted to television.

The sale of tickets (50 cents each) was handled by five women's hospital auxiliaries. Proceeds went to the hospitals.

For Sudbury, a city with 22,000 Hydro customers, using more than 181,000,000 kwh annually, the show was a resounding success.

To Wes the secret is to go "first class all the way." When he had a choice between a $55 display sign and a slightly bigger one for $65, he chose the latter "because the opposition is watching us."

As Hydro Chairman Ross Strike put it at the opening dinner: "In Sudbury you did a bang-up job." And even the competition will concede that point. ■



# I've Been Working on the Railroad

## North Bay Hydro veteran builds everything from rails to rolling stock by hand

THE roar of mighty steam locomotives—once so familiar a sound—no longer echoes throughout the province. And except for the ingenuity of men such as W. R. (Bill) Stewart, chairman of West Ferris Hydro, this dramatic chapter in the history of our country might soon be forgotten.

In the basement of his home, Mr. Stewart has faithfully reproduced every detail of a five-train railroad system, including shops, roundhouse, water tower, railroad station, tunnels and bridges. Starting with a short section of test track several years ago, he has gradually built up an exact replica of standard railroad equipment.

It is no coincidence that all the buildings in the model railroad system bear a striking resemblance to their counterparts in North Bay. Nearly every building was constructed to scale after Mr. Stewart carefully measured the original.

Except for the locomotives, Mr. Stewart built the entire system by hand during his spare time. He even formed the rails for the 300-foot section of interlinking tracks, in his own workshop. Using a home-made die, he molded the tracks in eight-inch sections from the rims of one-gallon paint cans.

To maintain control of his five trains when they are all running at the same time, Mr. Stewart developed a device known as a "track trip". It permits properly-spaced trains to run back and forth from one main line to the next without head-on or tail-end collisions.

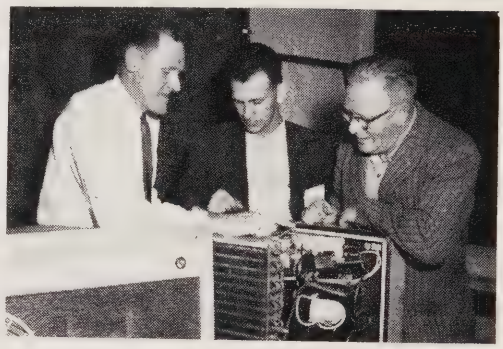
"Without my hobbies and other activities, I don't know how I'd even put up with the idle hours," Mr. Stewart says. And in the next breath he adds, "I intend to make the railroad system fully automatic when I get the time."

Just when that will be is anybody's guess. Mr. Stewart started working with hydro utilities when he first arrived in North Bay in 1906. Shortly after his retirement seven years ago as manager of North Bay Hydro, he became chairman of the newly formed West Ferris Hydro—a role he still retains.

Idle hours? The 77-year-old hydro veteran doesn't know what the words mean. ■

# Utilities join Ontario Hydro in electric heating course





*It was back to school for some 80 Ontario Hydro and municipal utility personnel who attended the electric heating workshop at Niagara Falls. Group, top photo, takes notes as Canadian Chromalox team describes latest equipment. Photo, left, shows Bill Quinlan, General Steel Wares, explaining window-type heat pump to George Robinson, centre, Windsor Hydro, and C. R. Lott of the Dryden H.E.C.*

THE expanding market in electric heating will require large numbers of specialists and qualified electrical contractors in the near future to maintain present high standards of installation.

To help meet this need, Ontario Hydro recently conducted a concentrated week-long electric heating workshop for more than 80 sales representatives from utility and Ontario Hydro offices throughout the province. The course was held at the Commission's training and development centre at Niagara Falls.

The new electric heating specialists are now equipped to conduct qualifying courses for electrical contractors in their own areas. Formerly, regions and utilities wishing to conduct such courses had been forced to wait until instructors were available.

In his speech of welcome to workshop delegates, W. R. Harmer, director of Ontario Hydro's Sales Division, described the workshop as "an opportunity for those of us associated with electric heating to exchange views and to discuss problems. In this way we can develop and follow uniform methods and procedures which will conform with the actual needs of electric heating in Ontario.

"Because of the recent reduction in electric heating rates and the prospect of further reductions sometime in the future, electric heating sales are expected to multiply," Mr. Harmer said. "The services of additional highly trained, competent personnel will be required to ensure an orderly development of electric heating in Ontario."

Reiterating this theme, Gordon McHenry of Ontario Hydro, manager of residential sales, said, at the close of the workshop, "We are relying on you, with the knowledge you have gained during this workshop, to spread the gospel of electric heating. For the time being, our chief goal is to train and qualify many more electrical contractors so that we will have many more people selling electric heating. The secondary objective is to get all qualified contractors to fully use the knowledge which we have given them so that they will be more self reliant as the market expands and workloads become heavier."

To give workshop delegates first-hand experience with available electric heating and control equipment, 14 leading manufacturers demonstrated their latest products. Similar demonstrations and discussions were carried out by manufacturers of insulation and central ducted electric heating systems, including cooling and air-conditioning equipment.

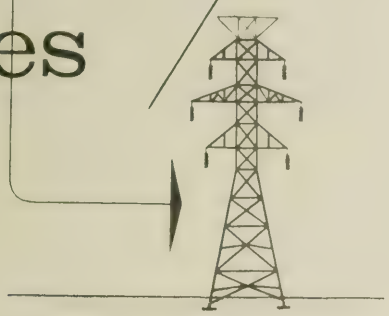
Other workshop sessions included instruction in sales and training techniques, alternate methods of calculating heat loss, and methods of increasing the number of electrically heated homes meeting triple seal standards.

Inspection of new electric heating installations and the importance of using equipment approved by the Canadian Standards Association and Ontario Hydro were discussed in detail. Delegates divided into small groups to discuss case histories of unorthodox installations, and how to encourage more homeowners to request the Triple Seal of Approval, proof of compliance with the high standards set by the Electric Heating Association of Ontario.

Guest speaker R. L. Boyd of Edwin L. Weigand Co. (Chromalox), Pittsburgh, congratulated his Canadian audience for successful marketing of electric heating as a product.

"Real success comes from a unified sales approach to electric heating," he said. "With the Electric Heating Association to spearhead the operation, Ontario has done a better job of organizing the sale of electric heat than the United States, where the tendency has been to exaggerate its advantages." ■

# along hydro lines



### Empty Schoellkopf tunnel A possible fallout shelter?

The mile-long power tunnel associated with the idle Schoellkopf plant owned by the Power Authority of the State of New York is being investigated by the U.S. Corps of Engineers as a possible fallout shelter. With an area of 192,000 square feet, it might afford protection to 15,000 persons in the event of a nuclear attack. ■



## Young Plowman Wins Hydro Prize

One of the top prize-winners at the 1961 International Plowing Match, held at Belleville, was Clayton Hunter of Hagersville. He took four firsts and a second. Among his awards was an electric motor presented on behalf of Ontario Hydro by I. C. Ingimundson, manager of the East Central Region. Some 420 plowing entries participated in the four-day event, which drew an estimated 90,000 people. ■

### Electric Heating Association Names executive for 1961-62

Two members of Ontario Hydro's Sales Division are included in the nine-man executive of the Electric Heating Association of Ontario, recently elected for the 1961-62 term. Serving in the capacity of directors are Ontario Hydro's residential sales manager G. M. McHenry and commercial and industrial sales manager I. S. Widdifield. G. E. Marshall of Canadian Chromalox Co. Ltd. is president. Ray Pfaff, St. Catharines P.U.C., is vice-president. ■

### Toronto Hydro employee Tackles bank holdup suspect

A Toronto Hydro employee who tackled a holdup suspect and risked death in doing so, may be in line for a Canadian Bankers' Association award.

Forty-eight-year-old James Milne, control assistant and a Toronto Hydro employee for the past 14 years, helped capture the bandit who shot three customers during a Toronto bank holdup in the latter part of October.



All three of the victims later died. The suspect, a 23-year-old man from Montreal, has been charged with capital murder.

When the sawed-off .303 rifle barked a fourth time, it was at Mr. Milne, who grappled with the killer. The shot was off target, but the bandit was able to break away and run down the street, until he was again overpowered by Mr. Milne, who held on until an off-duty constable arrived on the scene.

What made James Milne, a 170-pounder who stands five feet and 11 inches in stocking feet, tackle an armed man?

Mr. Milne thought the man was a hit-and-run driver at first.

"I saw this driver hit two parked cars and then run into another one, and I went to help him. I had already taken his licence number. He was leaning into the car, and when he turned around he had the rifle in his hands. I knew then he was more than a hit-and-run driver.

"After a struggle the gun suddenly went off, but it missed me. He ran away, but I caught up with him, and this time really held on."

Milne, father of five children ranging in age from six to 21 years, said that when it was all over he realized the danger he had been in.

Would he do it again? He says its hard to say, "but when you're staring into a gun, I guess you pretty well have to." ■

### "Back pack" thermoelectric generator Developed weighing only 36 pounds

A thermoelectric generator capable of producing militarily useful amounts of power, yet light enough to be carried by one man, has been developed by Westinghouse Electric Corporation for the U.S. Navy.

Thermoelectric generators produce electricity by converting it directly from a source of heat, in this case, bottled propane gas.

Solid, semi-conductor-type materials change the heat of the gas flame into electricity when a difference in temperature is maintained across them. The generator develops a gross of 340 watts of electric power. Its 450 thermoelectric couples are mounted hexagonally around the gas burner. ■

## press comment

When the provincial government announced the expropriation of the British Columbia Electric Company, it was inevitable that the publicly owned electric utility system of Ontario would creep into the arguments. Here is some of the press comment.

News of the North, Yellowknife, N.W.T., had this to say:

. . . "Ontario Hydro is used as an example of an ideal government operated utility, but, somehow—from this distance at any rate—it would appear that Ontario Hydro is divorced from the political field. Will this be permitted in B.C.?"

Asking itself why there had been little public uproar with regard to the B.C. expropriation, the Windsor Star said:

"Premier W. A. C. Bennett may have given at least one clue. He says putting these private companies under public ownership will lower power rates for B.C. industries and make them more competitive. And household consumers certainly won't object to lower rates either.

"If this be the real reason for the public ownership takeover in B.C., it is curiously similar to the origins of Hydro in Ontario. The plan for production of power under public ownership in Ontario wasn't the notion of long-haired radicals and socialists.

"It was promoted by Sir Adam Beck, a Conservative capitalist, and other industrialists, who thought they were being over-charged by the private power companies. The result has been cheaper power for both Ontario industries and householders."

And from the Sarnia Observer:

. . . "Ontario Hydro grew to its present efficient greatness by absorbing scores of inefficient and often unprofitable plants scattered throughout the province. The plants, operated by steam or power supplied by small waterfalls, have been absorbed by the provincial network of stations which started when Sir Adam Beck first harnessed the flow of Niagara Falls, and has spread over the fast-flowing and once-wasted waterpower of the province's wild waters.

British Columbia cannot begin its Hydro program from the lowly beginnings which prevailed in Ontario. Instead of absorbing small units of little more than scrap value, the B.C. government must absorb successful concerns whose value runs high in the millions." ■

### Safety posters by Ontario Hydro Will be displayed in schools

A new program of electrical safety, designed especially for elementary and secondary school students in the province, has been launched by Ontario Hydro.

In co-operation with the Department of Education of Ontario, the Commission has produced a series of safety posters to be displayed on school bulletin boards throughout the school year.

The posters cover three aspects of electrical safety of particular importance to young people. These include the hazards of fallen power lines, the dangers of flying kites and model airplanes close to these lines, and the damage that can result from throwing stones or shooting at pole insulators. ■

### Victoria sets the pace In underground distribution

A six-year, $2,700,000 underground distribution program in downtown Victoria will be completed next spring.

Being undertaken by B.C. Electric Company, the 30-block sub-surface grid will give the west coast city the first pole-less downtown area of any Canadian city of comparable size.

The underground system includes some 128 miles of 4" ducts, 244 manholes and 38 transformer vaults. During the program, some 55,800 cubic yards of material have been excavated and 15,300 cubic yards of concrete placed. ■

### Energy in the spotlight At forthcoming Power Show

Leading Canadian coal, gas, oil and electrical executives will endeavour to foretell what the future has in store for their industries at Canada's Power Show, December 7 to 9, Queen Elizabeth Building, Exhibition Park, Toronto.

The show will be officially opened by Hon. Robert Macaulay, Q.C., M.P.P., 1st Vice-Chairman of Ontario Hydro, who will predict the development of hydro, thermal and nuclear-electric power. Other speakers will describe Ontario Hydro's $217,000,000 Lakeview thermal-electric plant and the Douglas Point nuclear-electric development. ■



## Dr. Holden Receives Honorary Degree

Kingston's Queen's University recently honored Dr. Otto Holden, left, former chief engineer of Ontario Hydro, with an honorary Doctor of Science degree. Shaking hands with Dr. Holden is Prime Minister (then Education Minister) John Robarts, who was also honored with a degree. Others in the group are Leslie M. Frost, the former Prime Minister, and Dr. J. A. Corry, who was installed as the new principal of the university. Dr. Holden, who retired last year, served the commission for 47 years. The citation that accompanied the degree referred to him as "the master mind in the design and construction of power plants for Hydro." ■

# municipal briefs

**London P.U.C.** is considering a plan whereby it would co-operate with the banks to finance the purchase of major electrical appliances. It works this way. A dealer would contact the utility when a customer wished to finance the purchase of an appliance. The utility would check the individual's credit ratings from its own records and advise the bank. It, in turn, would pay the dealer and recover the money on a monthly instalment basis from the purchaser at the normal bank interest rate. Individual purchases would be limited to a maximum of $750. The plan has won approval of the majority of dealers canvassed so far. Brampton Hydro is already operating a somewhat similar plan.

**Kitchener City Council** has approved a five-year, $1,333,000 street lighting improvement program which will commence immediately. Rudy Senyshen, P.U.C. chief engineer and chairman of a joint hydro-city committee, said about 100 of the new lamps would likely be up by the end of the year. Almost 7,000 installations are contemplated, mostly mercury vapor.

**Police Village of King City** is investigating the advisability of becoming a cost contract Hydro municipality. It is presently being supplied by Ontario Hydro as part of the Richmond Hill Rural Operating Area.

**Waterloo Hydro** estimates its 1962 expenditures at $483,000. Debentures will be issued for $300,000. Largest single item is a transformer station expected to cost $300,000. The Waterloo utility has been receiving power from a transformer station owned by the Kitchener P.U.C. The agreement between the two utilities has now expired, and the Kitchener Commission does not wish to continue the arrangement because the station is fully loaded.

**Brockville P.U.C.** is eliminating several blocks of overhead distribution system with a 44,000-volt cable servicing a new "underground" substation being built to replace a station recently destroyed by lightning.

**Lindsay Hydro** expects capital expenditures to total $128,700 in 1961, including $92,800 for improvements to the electrical distribution system. Debentures will be issued in the amount of $100,000.

**Hamilton Hydro** experienced the first strike in about 40 years when some 200 outside workers, members of Local 138, International Brotherhood of Electrical Workers, walked off the job recently. Monetary issues were not involved. Supervisory and technical personnel operated the system for the 40-hour duration of the strike.

**Sudbury Hydro** is seeking more information before deciding whether or not to approve participation of its staff in the survival training course of the Federal Government. In order to make up the difference in wages, Commissioner Ted Dash estimated it would cost the utility approximately $60 per man, based on an average weekly wage of $100. Considering the same problem, the Peterborough Utilities Commission decided that it would not make up the difference in wages for personnel taking the course.

**Independent Consultants** engaged to examine the operations of the Port Arthur P.U.C. have recommended some sweeping changes. Among them: integrated billing for electricity, telephone and water. Meters would be read only once a year, and the monthly bill arrived at as an average. According to the report, there would be 160,000 fewer transactions a year at city hall, resulting in a saving of some $35,000. Also suggested was a reduction of more than 40 in the present staff.

**Reporters** covering meetings of the Kincardine P.U.C. have been provided with their own table. While the press has never been denied admittance, the Kincardine News reports, the press has had to adopt "peculiar stances" to take notes.

**Chatham Hydro** lists $80,000 for the construction of a service garage among its 1961 expenditures, which

are estimated at $169,000. Of steel and cement block construction, the garage will be built on a lot purchased previously.

**James McMullen** has been named manager of Campbellford Hydro. He has 41 years' service with the P.U.C., and will succeed A. I. Evans, whose resignation becomes effective shortly.

**Mimico P.U.C.** and Ontario Hydro packed the local High School auditorium recently when more than 400 residents turned up for Hydro Showtime, held under the auspices of Mimico Chapter, I.O.D.E. Appliance demonstrations, cooking instructions and handsome prizes were the chief attractions.

**Dutton P.U.C.** will come into being January 1, to serve 300 customers. The system is now being operated by a committee of council.

**Veteran Port Arthur** Commissioner Ralph Chandler has announced that he intends to retire from that office this year. Mr. Chandler was also manager of the P.U.C. for many years. And his fellow commissioner, John Masters, does not intend to run for office again, due to pressure of business. Mr. Masters was on the staff of the P.U.C. for many years before he entered private business and was elected to the Commission itself. ■

### $7 million control dam project Underway on the upper Niagara

Construction of cofferdams has commenced in conjunction with the addition of five 100 foot wide control gates to the international control dam on the upper Niagara River.

The existing 13-gate control dam, about one mile above the falls, would be inadequate to maintain water levels when the Robert Moses Niagara plant on the American side reaches full production in 1962.

Guide walls being built parallel to the shore will permit safe passage of ice on the Canadian side.

The project will cost $7,000,000, and is scheduled for completion in the summer of 1963. It is a joint undertaking of Ontario Hydro and the Power Authority of the State of New York.

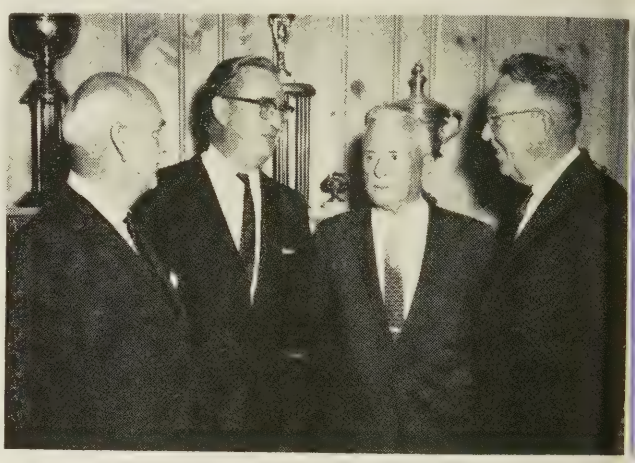
The extension will not affect water flows over Niagara Falls. ■

### Sarnia fourth largest user Of electric power in Ontario

Electrical power consumption in the Sarnia area has shot up ten-fold over the past 10 years, according to G. S. Phelps, manager of Sarnia Hydro.

In a brief report to the Sarnia Commission, Mr. Phelps revealed that power purchased from Ontario Hydro had increased from $500,000 in 1950 to more than $5,000,000 in 1961. He said the main reason for the greatly increased power consumption was the continuing industrialization of Sarnia, particularly the establishment of the Dow Chemical Company plant, which now uses some 55 per cent of the total power supplied to the Sarnia area.

Sarnia is now the fourth largest power user in Ontario behind Toronto, Hamilton and Ottawa, Mr. Phelps estimates. ■



## Weston Celebrates 50th Anniversary

Weston P.U.C. Chairman B. Pollard chats with three sons of three of the original Weston P.U.C. Commissioners who got together to help celebrate the Commission's 50th Anniversary. Left to right are: Dr. Howard Charlton, Mayor G. W. Bull, and A. M. Cruickshank, himself a former commissioner, and Mr. Pollard. The occasion was the eighth annual Commissioners' Dinner. When the Weston Light and Power Commission joined the Hydro family in 1911, it had just over 300 customers—at last count there were some 3,500. In the last 50 years the average monthly peak load jumped from 63.3 kilowatts to 8,166 kilowatts. ■

### Promotional program shaping up On supplementary electric heating

A new promotional campaign with the theme "Complete Your Home with Electric Heat" is scheduled for January 29 to March 10, 1962, by electrical contractors, municipal electrical utilities, manufacturers, distributors and Ontario Hydro.

The province-wide promotion of supplementary electric heating will tie-in with a utility "pay later" finance plan now being worked out for re-wiring, and with government-sponsored "do it now" winter work programs.

Total sales of 15,000 installations are anticipated. With an average installation of one kilowatt per home, the addition of 15,000 kilowatts to utility and rural loads would result in an estimated increase of $300,000 in gross annual revenue. ■

# OFF THE WIRES

Continuity of service, good customer relations and technical and administrative competence are the hallmarks of efficient electric utility operations. But insignificant events can overshadow these qualities from the publicity point of view as Sudbury Hydro recently discovered.

A four-minute rescue operation in which a bob-tailed tom



cat was plucked from his four-day perch atop a pole carrying a 12,000 volt primary was picked up by Canadian Press and featured in newspapers across the province. The cost of this favourable publicity was estimated at about $2 in wages, 40 cents in lost power revenue and four minutes of inconvenience to utility customers in the area.

Unfortunately, this particular drama ended in tragedy. Humane Society officers were flooded with calls from people wishing to adopt the tabby, but he died a few days later from exposure.

* * *

The latest in lamp posts is a "featherweight" street-lighting column made in England. Although 15 feet high, the column weighs only 30 pounds and can be toted about on a man's shoulder. A non-corroding alloy is used in the columns, which are made in one piece by a special welding technique. Erection time is said to be 50 per cent less than with concrete posts. There is no report on how they stand up in a high wind, and they might offer a new challenge to the tippler who sometimes wakes up with a "no parking" sign beside his bed.

* * *

Congratulations to Gordon H. Fuller, commissioner of the Windsor Utilities Commission and a past president of the O.M.E.A., who climaxed the observance of his 46th wedding anniversary on October 26 this year by his election as President of O.M.E.A. District 8 during the annual meeting at Kingsville.

* * *

Carrying the "Live Better Electrically" theme to the ultimate, Donna Cochrane of Orangeville Hydro was married recently to George Herring of the Georgetown Public Utilities Commission.

* * *

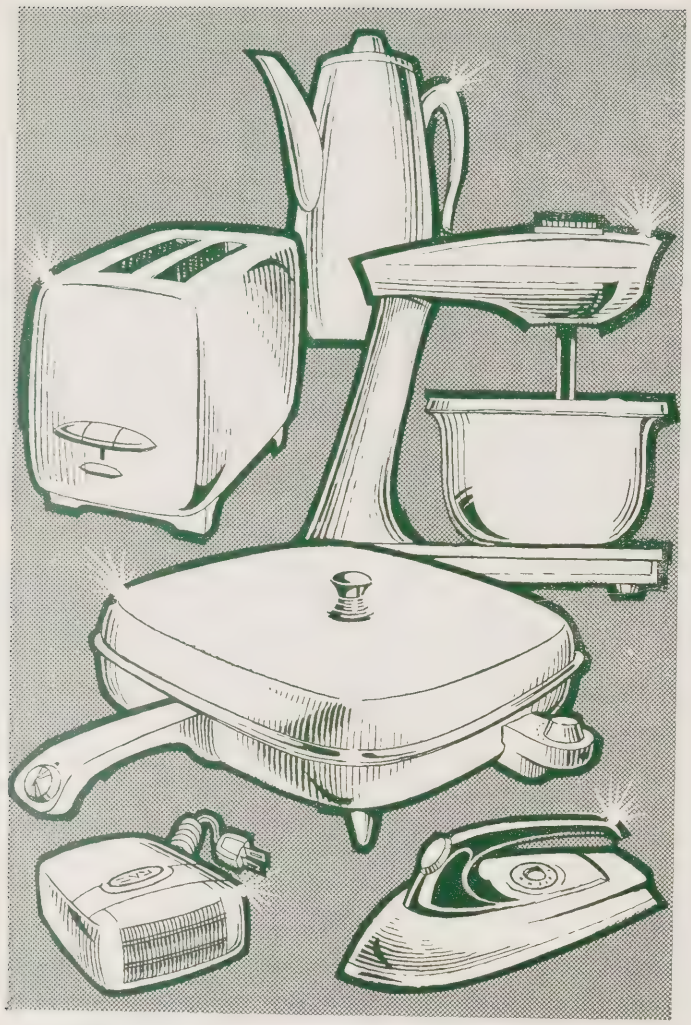
Honesty is the best policy, but it isn't always the easiest. Take the case of James Yeager of Windsor Hydro, who found a hefty roll of old-style bills stuffed in a switch box where he was installing a new water heater. He promptly turned it over to the home owner, and, in a letter of commendation to the Windsor Utilities Commission, the customer said: "In this day of the fast buck and the gyp artist in business, it is a pleasure to deal with an organization such as yours and its employees."

* * *

The familiar red seals of the National Sanitarium Association will soon be making their appearance, and, in view of the work being done by this group, the symbols deserve a place on our Christmas correspondence. The Association agrees with a widely held belief that tuberculosis is a dying disease. Last year, 835 Canadians died of it and 6,345 new active cases were discovered. In advocating the precaution of a free T.B. chest x-ray, the Association points out that first infection takes place most frequently in the 20 to 40 age group.

* * *

A little-known feature of Ontario Hydro's standard practice procedure was invoked recently in the Western Region to the benefit of Mrs. Harriet Woolfenden, Ipperwash Beach. She had erected a barrier and stood guard over a live conductor, downed in a storm, until line crews arrived. Regulations provide that a small cash award may be made to citizens reporting or guarding damaged Commission property. They provide, as well, for any personal expenses incurred. ■



# *Gifts that shine at Christmas time!*

## ELECTRICAL GIFTS TO LIGHTEN AND BRIGHTEN THE WHOLE NEW YEAR!

No wonder modern electric appliances make such exciting Christmas presents! Their shining promise of beauty, comfort and convenience adds a sparkle that doesn't wear off! You have the satisfaction of knowing that your gift of a modern electric appliance will be giving pleasure in the fullest measure for years to come!

You get more out of life when you get the most out of electricity.



ONTARIO

# HYDRO NEWS

DECEMBER, 1961

ONTARIO HYDRO NEWS • DECEMBER, 1961 • VOL. 48, NO. 12

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## ABOUT THIS MONTH'S COVER

CREATIVITY is the artist's hallmark, and art director H. Detlev Voss came through with flying colors when asked to design a December cover. Det composed the heavenly quartette from white Dresden china figurines arranged against a backdrop improvised from a pleated white sheet. All the color tones were achieved with the ingenious use of light. Staff photographer Harry Wilson took over from there.



*J. M. Hambley, Lt.-Col. A. A. Kennedy, George Gathercole, W. Ross Strike, William G. Davis, D. P. Cliff and E. B. Easson.*

# A CHRISTMAS MESSAGE FROM THE CHAIRMAN

Perhaps the greatest counter-balance in the present days' cold war jitters and frustration is the annual approach of the Christmas Season with its Christian message of Peace on Earth and Goodwill Toward Men.

It is the season when, if we are wise, we push aside our immediate cares and difficulties and turn to the healing influence of the manifestation of our affection toward the members of our immediate family and friends, and goodwill to our neighbours and men everywhere.

The enthusiasm with which we enter into the true spirit of Christmas is the measure of our faith in the Christian ethic and our belief in the validity of the application of its principles.

The cold war can best be waged by the persistent effort of applying the warm principles of respect and consideration for all those with whom we meet.

We of the Hydro family recall at this season that we have been very fortunate in the great number of dedicated people everywhere in our organization who have worked tirelessly through the years in an effort to build a great organization based on co-operation and integrity. Let us never waiver in our determination to maintain this tradition and to enhance it as we move forward in a changing world to new conditions, problems and responsibilities.

*Chairman, Ontario Hydro*

"And she brought forth
her first-born son
and wrapped Him in swaddling clothes,
and laid Him in a manger.

St. Luke 2:7.



# The Nativity in Miniature

by Joan Allen

THE story of that first Christmas, told so simply in the Scripture, has also been kept alive through the ages by three-dimensional reproductions of the scene in the Bethlehem stable.

These Nativity scenes, or crèches, as they are more often called, have appeared in many different forms, frequently including Joseph, the shepherds, and the wise men, but the figures of Mary and the infant Jesus in a manger have always been the centre of interest.

In many Canadian homes, the crèche still plays an important part in the family Christmas celebrations. Year after year, the cherished figures and the tiny crib are unwrapped and arranged with care in the place of honor. Often the scene is put in readiness on Christmas Eve when the family gathers to lay the figure of the Christ Child in his manger.

The figures in these miniature Nativity scenes may have been carved by the family's pioneering ancestors or brought with them to Canada from their native land. Most Canadian crèches today are reminiscent of those of other lands and other centuries, and are usually small enough to fit on a small table or mantlepiece.

The model which has inspired all crèches is the Cave of the Nativity in Bethlehem. Every Christmas, thousands of pilgrims make their way to the little town to see for themselves the cave, or cavern, where Jesus is said to have been born.

Crèches were first used by the early Christian church as a substitute for the trip to Bethlehem. Religious leaders also made extensive use of crèches, canticles and, later, miracle plays, to teach Christian doctrine to an illiterate public.

St. Francis of Assisi is credited with establishing the crib in its present form outside his church in Greccio, Italy. In 1223, St. Francis preached before



*Wooden figures of this crèche in the German tradition were carved by Franz Tittman of Oberammergau, W. Germany.*

a manger filled with hay, an ox and ass nearby. Although oxen and donkeys are not mentioned in the New Testament, the crèches displayed in the churches had included them on the strength of prophetic references to these animals in the Old Testament. So St. Francis continued the custom.

During the 15th Century, Renaissance painters and sculptors concentrated more and more on the episodes surrounding the birth of Jesus. The nobility, as well as the churches, began to commission cribs, which became increasingly elaborate as time went on.

Mechanized crib scenes became popular, especially in Germany. About 1589, Elector Christian I received a gilded brass *Krippe* (Crib) from his w Sophia. When wound up, a globe on top ope showing God surrounded by angels. Below, a w slides back to reveal the manger. Angels come do from heaven, Joseph rocks the cradle, the ox a the ass arise from their knees, and the shephe march in, followed by the three Wise Men.

During the 17th and 18th Centuries, Nap became the centre of the highly-specialized trade crib-making. King Charles III of Naples sp months each year arranging his *presepio* (mang in several rooms of his Palace at Caserta, while queen and her ladies-in-waiting sewed silk and vel

# The Nativity in Miniature



*Contemporary crèche sculpted by Ursula Hanes of Toronto.*



*Hungarian peasant tradition by Dora de Pedery Hunt, Toronto.*

costumes. Some 300 of the thousands of figurines which once composed Italy's most magnificent crèche are now preserved in Caserta.

Leading families in Rome built crèches in competition with each other, often employing the best craftsmen, seamstresses and artisans to work on them all year long. The highlight of the 17th Century Christmas season was the time spent visiting, admiring and criticizing other families' Nativity scenes.

At the same time as the nobility of Europe was striving for opulent, impressive crèches, the lower classes were carving their own figures from scraps of wood. Very few examples of this folk art remain, mainly because they had no intrinsic value. Only in Bavaria and Austria, where the upper and lower classes were much closer, did the rich people appreciate the figures carved by the villagers and peasants. Because they bought and treasured these simple figures, many examples can still be found in museums.

The 19th Century brought an end to the elaborate crèches, and, for many years, changes in taste allowed the crib everywhere to descend to the status of a disdained children's toy.

In the past few years, however, crèches of every kind have regained much of their former popularity. Once again churchmen, this time missionaries, are using crèches to tell the story of Christmas. In Northern Laos, Father Lucien Bonchard explains the coming of Christ to groups of Meo tribesmen as they gaze at the Christ Child swaddled in the same black cloth they wear. Lucien Felix, a Swiss Calvinist missionary, has set up home-made crèches in his palm-hut leper hospital in Southern Laos.

In North America, some city parks have their life-size but very simple cribs similar to the one which St. Francis built in Greccio. Many families are buying crèches, a piece at a time, for their homes or front lawns. Tiffany's, of New York, displayed a diamond and sapphire crèche just recently.

Sculptors are once again turning their attention and talents to the Nativity. Some of the more recent cribs are starkly modern; others are in the peasant tradition, still others in a less elaborate version of the *presepio* of Naples.

This renewed interest in crèches, some say, reflects the efforts of many Christian groups to stress the religious aspects of Christmas, and to discourage the prevalence of commercialism during this season. ■



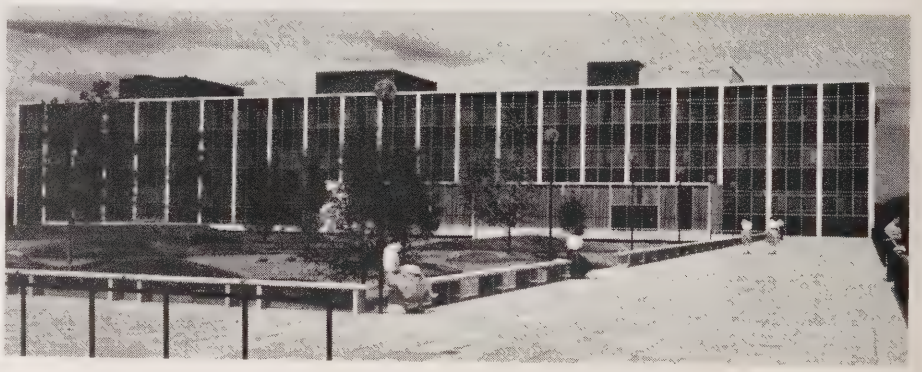
*UNIVERSITY OF WESTERN ONTARIO—faced with rough stone and similar in its conventional architecture to other buildings on campus, the Alexander Spencer Engineering Science Building was completed in 1959 at a cost of $1,400,000.*



*McMASTER UNIVERSITY — part of a recent $13,000,000 development program is this nuclear reactor. A spacious Engineering Building was added in 1959.*

## Engineering and scie

*CARLETON UNIVERSITY—modern architecture features Henry Marshall Tory Science Building, right, at new Rideau River campus. First engineer graduated from this post-war Ottawa university in 1961.*



*UNIVERSITY OF WATERLOO — called the engineering cell, buildings below were built since 1958. They cost some $8,000,000 and provide 300,000 feet of invaluable floor space.*





*ASSUMPTION UNIVERSITY OF WINDSOR — affiliated Essex College Engineering Building, shown here, was opened in 1961. Future expansion will add physics and chemistry departments now housed elsewhere on campus.*

**lities lead university expansion**



*UNIVERSITY OF TORONTO—mostly "engineering land", this complex is just part of Faculty of Applied Science and Engineering. Galbraith Building, foreground, is latest addition.*

# A NEW LOOK TO THE OLD ALMA MATER

Ever-increasing demands for graduate engineers have focussed new attention on training facilities in Ontario universities.

Enrolment in well-established engineering schools and departments has soared, a number of universities have added engineering courses, and a new university has been founded with an engineering program which is Canada's first experiment in co-operative higher education. To house these new engineering faculties and departments and the increased enrolment in established engineering schools, nearly every university in Ontario has included an engineering building or combined science - engineering building in its current expansion program. Some are illustrated on these pages.

Degrees were granted to engineering graduates for the first time, in 1961, at

Carleton University, Ottawa; McMaster University, Hamilton; and Assumption University, Windsor. First engineering graduates were granted degrees at the University of Western Ontario, London, in 1958; at the University of Ottawa in 1959; and at the University of Waterloo in 1960.

In 1956, the newly founded University of Waterloo introduced to Canada a new concept in higher education with its co-operative engineering course. Students alternate three-month academic periods on campus with similar periods in industry, where they receive practical experience related to their academic courses. The initial class attracted 74 students, and the first graduates received their degrees in June, 1960. By January, 1962, more than 900 students will be enrolled in the University, which has added a Faculty of Science and a Faculty of Arts. In addition, well over 1,000 persons are registered in a variety of extension courses under the University's Adult Education Program.

And the present expansion of science and engineering training facilities is expected to continue. At the Resources for Tomorrow Conference held this fall in Montreal, the Federal Government was called upon to establish a $50,000,000 fund to assist Canadian universities in the erection of science buildings over the next five years.

Physical expansion of engineering facilities on Ontario campuses has been accompanied by a change in emphasis in engineering curricula. The "know-how" type of detailed engineering practice has been relegated from the university to on-the-job training in industry after graduation.

The general trend in engineering education is placing more emphasis on skill in mathematics, physics and chemistry, and increasing breadth of training in English, history, economics and human relations in general.

R. R. Myers, professor of electrical engineering and chairman of the Faculty of Engineering of the University of Waterloo, says, "In short, the function of the university engineering curriculum is no longer to match the graduate to the industrial job market, but rather to give him a potential for creative activity in his chosen field. The present re-orientation of the undergraduate curriculum is toward truly scientific fundamentals, with a strong, almost total de-emphasis of engineering practice in industry." ■

# ONTARIO HYDRO SCHOLARSHIPS

Under Ontario Hydro's continuing scholarshi program, 12 awards for academic excellenc totalling $3,300, were shared this year by st dents in Ontario universities, colleges an technical institutes.

Initiated in 1952, the scholarship program designed to assist and encourage engineerin science students and to promote enrolment i engineering courses related to Ontario Hydro operations.

Scholarships of $300 each were presented t the following:

University of Toronto—B. C. Sherman, T ronto, first-year engineering physics; Mar Masak, Toronto, second-year engineering phy ics; J. A. Stanton, Port Stanton, third-year civ engineering;

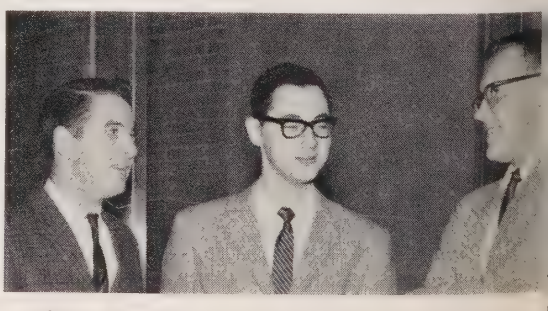
University of Western Ontario, London—( Darrel Davidson, Chatham, first-year enginee ing science; David J. Fader, Dorchester, secon year engineering science; A. Arthur Marriag London, third-year engineering science;

Queen's University, Kingston—Donald Western, Pointe Claire, Que., first-year applie science; Reino Rasku, Geraldton, second-ye electrical engineering; Timothy Stephens, Cor wall, third-year mechanical engineering;

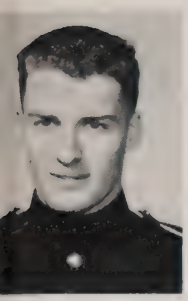
Lakehead College of Arts, Science and Tec nology, Port Arthur—Veikko Johannes, Po Arthur, applied science.

Joint winners of a $100 scholarship give annually to a cadet in his fourth year of ele trical engineering at Royal Military Colleg Kingston, were Jean Yvon Durocher, Bourl maque, Que., and R. R. Austin, Port Hope.

W. A. Grundman, a mechanical technolog student at Ryerson Institute of Technolog Toronto, was awarded a $200 bursary.



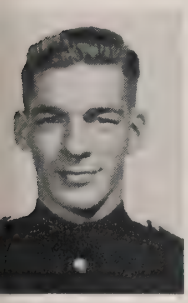
*J. Stanton* *B. C. Sherman* *M. Ma*



*R. R. Austin*



*G. D. Davidson*



*J. Y. Durocher*



*D. J. Fader*



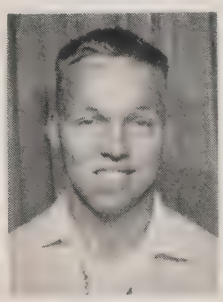
*W. A. Grundman*



*V. Johannes*



*E. A. Marriage*



*R. Rasku*



*T. Stephens*



*D. F. Western*



# RING OF IRON

Members of the engineering fraternity in Canada usually wear an identifying symbol of dedication—the wrought-iron ring on the little finger of their working hand.

Each time they use a slide rule, or reach for a pencil, the iron ring reminds them of their responsibilities as engineers.

The story behind the iron ring goes back more than 35 years to Professor H. E. T. Haultain, since retired, who was Head of Mining Engineering at the University of Toronto for 30 years. From his close association with countless graduate and undergraduate engineers, Professor Haultain became aware of the need for a profession of faith.

A line from Rudyard Kipling, "But Iron—Cold Iron—is master of them all," gave Professor Haultain his answer. He would ask Kipling to write the Ritual of the Calling of an Engineer. Those taking part would be given iron rings as symbols of dedication.

Kipling did write the ritual, and the first iron ring ceremony was held in the spring of 1926 at the University of Toronto, which was designated Camp Number One. The Seven Wardens of the ritual, all ex-presidents of the Engineering Institute of Canada, consider applications to form other camps, which are usually associated, for convenience, with a university engineering school. There are now 14 camps in Canada.

The wardens in each camp consider applications to take part in the ceremony from candidates who have completed an engineering course, or have been in active practice. Most, but not all, successful candidates are university graduates, and some are engineers trained in other countries. The ritual is observed only in Canada. ■

# DECK THE TOWN WITH OUTSIDE LIGHTING

by Leona Kirkwood



*Toronto's Yonge Street decks out with Christmas lights to attract shoppers to the traditional downtown area.*



*A look behind the scenes*

*at Christmas decorations*

*on the commercial and municipal level*

At Christmas time, the average Canadian likes to sing of yule logs, wassail bowls, partridges and Good King Wenceslas who, apparently, spent a fair bit of his time looking out of his window.

However, in practice, Johnny Canuck's idea of Christmas observance has changed considerably.

While he may still enjoy a session with the Wassail bowl, he has substituted turkey for partridge, and the yule log has given way to a vast multitude of gay Christmas lights that now represent a multi million dollar industry.

Outdoor decorative lighting has become so popular and ingenious that if King Wenceslas were around, he would probably remain glued to his window in order to admire the electrical artistry of his neighbors.

To get the inside story about outside lighting at the municipal and commercial level, Ontario Hydro News called on Bryce Kerr, soft-spoken manager of Noma Displays Limited. His firm, a wholly-owned subsidiary of Noma Lites Canada Limited, was set up four years ago because of growing interest in commercial Christmas displays.

The parent firm had discovered that more and more groups such as small municipalities and chambers of commerce wanted gaily-bedecked streets, king-sized Christmas trees and other symbols of the season. They also wanted advice about design, materials and costs.

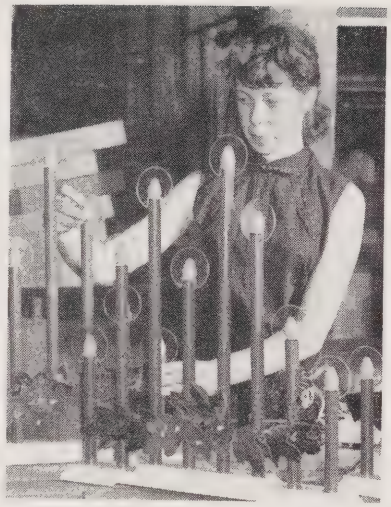
Behind the desire was the knowledge that the more festive the decorations, the more Christmas spirit, and the more money the public was likely to spend.

Up until the end of World War II, decorations were bought almost exclusively by the householder and were kept within his four walls. However, the end of the war, which saw the lights come on again all over the world, also saw commercial interests stringing some of those lights outside.

Mr. Kerr noted that the electric Christmas lighting business has grown so much that his firm's Owen Sound production plant operates on a year-round basis even though the season itself runs only from mid November until the New Year.

Noma Displays acts somewhat like the old fashioned doctor, who not only diagnosed the trouble but also sold the remedy. In other words, the firm not only sells the displays to its customers, but also leads





*In an era of pink plastic Christmas trees, a hearty public appetite remains for traditional items like the jolly snowman, left. Yuletide decorations are big business, and while demand exists for only a few weeks, Noma Lites operates its Owen Sound plant on year-round basis. Worker, right, is testing lamps.*

them away from gaudy projects and gives advice on how large the display should be, its locality, etc.

Mr. Kerr said his representatives seldom go door-knocking to solicit business from municipalities or business groups. The customers usually come to them. The firm finds many of its potential customers are prodded into thinking about commercial displays by the Canadian Beautification Society and the Canadian Chamber of Commerce.

The Chamber sends out a brochure yearly suggesting ideas for Christmas decorations, contests for the best decorated stores and homes, etc. Its advice is concrete: for example, one circular suggests a five-year cross-street plan with the cost for the first year as low as $38.50 and gradually increasing to a total of $288.70 at the end of five years.

Although large companies like the T. Eaton Co. and Simpson-Sears have their own design departments, and thus handle their own lighting decoration, small businesses and organizations often approach the few firms like Noma's which specialize in yuletide adornments.

The display firm then sends out a representative armed with pictures, slides and sketches, to suggest ideas to the customer. One of the first steps the agent takes, said Mr. Kerr, is to discuss the power situation with the local electrical utility office. His people will handle the installation, but usually it is dealt with by the local Hydro men.

Generally, said Mr. Kerr, the cost of the project runs from $200 to $25,000, although the last sum is rare indeed. As an example of the number of firms interested in display, last year, in Toronto alone, his firm handled 82 buildings as well as downtown Yonge Street.

The Yonge Street project is the biggest which Noma has handled to date. In a bid to get Metropolitan Toronto and area shoppers back to the city's once traditional shopping grounds, the Downtown Business Men's Association Inc. decided festive lights would be part of their drawing card.

Noma supplied 25 cross-street sections of decorations with more than 11,000 lamps. Actual installation was handled by a sub-contractor and required 400 man-hours to complete. Trucks with aerial ladders were used to hoist the lights well above traffic.

But to the public it was like magic. Few noticed the workmen. One week the street was its narrow, conservative self, and the next it seemed like a reasonable facsimile of New York's famed Times Square.

Firms and chambers of commerce are much like the average householder, Mr. Kerr noted. They start off in a small way and add each year. However. commercial interests have one great advantage over the householder: they can split the cost among interested merchants.

Although the commercial concept of outdoor lighting as a means of loosening purse strings is comparatively new, the style of decoration is not. Noma turns out some designs that are aesthetically advanced, as well as such avant-garde items as silver, pink or blue trees of wood or plastic, but it finds a sturdy public appetite for time-honored symbols such as Santa Claus, angels, sleighs and reindeer.

Mr. Kerr says that there is every indication that Canada will grow brighter and brighter in the Christmas season of the future as merchants become aware of the psychological effect this outdoor handiwork can have on the buying habits of the nation. He feels that every new house and shopping centre is a likely purchaser of Christmas decorations.

"At one time, indoor decoration was the rule, but now sales of outdoor lighting have taken the lead," he says. And he credits the increased use of lights to population growth, more ready money, improved Hydro facilities and cheaper electricity.

From the point of view of the electrical utility, Christmas decorations are small potatoes. In the cold, hard light of economics, the limited load they represent is probably offset by its characteristics. Coming in December, the traditional peak load month on most Canadian utility systems, it cannot be regarded as a valuable source of revenue.

But in Ontario, at least, where Hydro stands for electricity, the gay appearance of its cities and towns says "Merry Christmas" for the people who supply the power. ■

## Ontario Hydro develops money-saving

# LINE RELOCATION TECHNIQUE

Power line moving for road widening and other reasons is an onerous and costly task which most utilities are required to tackle from time to time.

Ontario Hydro is no exception, and, with the wisdom of experience and the assistance of ingenious equipment, the Commission has developed a technique which is faster and less costly than methods previously employed.

A recent example of the new and advanced procedure involved the moving of 90 poles and three miles of live, 8,000-volt rural line in the Snelgrove area of Peel County to make way for a road-widening project. The operation was carried out without service interruption.

Key to the successful move was the use of a radial arm derrick and digger, corner-mounted on a special truck body. This machine dug the new hole, removed the existing pole by means of a hydraulic butt puller, and lifted, moved and reset the pole in the new position, from six to 12 feet removed. Proceeding pole by pole, a small line crew was able to do the job swiftly and efficiently.

The poles were moved intact, some with transformers attached as well as the conductors and insulators. Ontario Hydro estimates the savings at about $4,000 per mile over conventional methods, whereby a new line is constructed parallel to the original, which must then be removed. The poles, in this instance, had been carefully treated when they were installed more than 30 years ago, and they were found to be perfectly sound.

Because line relocation is a recurring problem, Ontario Hydro has acquired several of the versatile derrick units, and expects to derive several benefits. In addition to speeding up the job and reducing costs, the units make it possible to relocate lines without irritating customers with service interruptions. And they eliminate much of the strenuous labor normally associated with this type of operation.



*Dig, heave, swing and drop—represents the sequence of operations carried out by versatile radial arm derrick and digger in relocating power lines. Central Region crew is shown here moving 8,000-volt line without power interruption.*

# FALLOUT



*How much is haze and how much is air pollution? This view of Toronto from the lakefront suggests fallout problem facing municipalities. Fuel burning in many forms is mostly to blame.*

At a time when the world is undergoing a crisis over nuclear fallout, very few people worry much about the effects of run-of-the-mill fallout from air pollution.

Yet the atmosphere above our cities is swimming with pollutants. City dwellers in Ontario would refuse to eat food as dirty as the air they breath.

Each month, tons of dust fall on each square mile of many Ontario communities. Huge quantities of gases are produced by fuel burners.

If you live in the city, air pollution surrounds you. In the suburbs it's reaching out for you. With wind currents that discriminate against no one, not even the countryside is immune.

Air pollution control officials place the primary blame on fuel burning, whether this is in a plant, a home, or an automobile. Other big dust makers include highway work, construction operations, and unpaved parking lots.

Nature, on occasion, adds to the problem. Winds whirl natural dust from the ground; the earth gives off gases which corrode buildings; ragweed on a city lot contaminates the air with pollen.

It's an expensive business to put up with.

Its damage to crops, buildings, animals and human beings is estimated in the tens of millions of dollars. In congested, industrial Britain, the tab last year was put at $650,000,000. The U.S. estimated its losses at $1,500,000,000.

Although the atmosphere is the largest natural garbage can we have—receiving and cleansing itself



*Air pollution is everybody's business, and Ontario Hydro, through research and the use of modern equipment at its own plants, is helping to overcome this problem.*

by Michael Sullivan

# IS A GROWING PROBLEM

f tons and tons of dust and gases—it isn't a limitless eservoir.

Clean air will come to the province only after veryone is convinced air pollution exists, and that e is a contributor—that his immediate health and elfare are threatened.

There is clearly a need for public education.

The average citizen must be convinced air pollu- on control will improve his health—and keep his ır and shirts clean longer.

Storekeepers must be convinced pure air and ean buildings will attract more customers.

Industrialists must be satisfied control equipment on't wipe out their profits, but will result in more oodwill and less time off for sickness. At the same me, industry is not the villain it is considered to e by the public. The consensus among the experts that industry in Ontario today accounts for a latively small proportion of air pollution.

Ontario Hydro, on the threshold of a new era thermal generation, is well aware of the stake holds in the air pollution picture. Its major nemies are dust—in this case, fine particles of ash hich escape the furnaces—and sulphur dioxide, a is which is given off when coal burns.

The Commission has set up a two-pronged attack med at keeping its contribution to air pollution a minimum.

"At all our thermal stations we install dust col- ctors that take out dust from the gas stream, leaving e cleansed gases to go up the stack," says Frank Nelson of Hydro's Generation Design Department.

Mechanical collectors effectively cut out heavy dust particles down to sizes of 20 microns (one micron, the measurement of dust, is .001 mm. in diameter). Commonly known as cyclones, these collectors are large tubes into which the escaping dust is blown with great force. As it swirls around, it is driven to the sides by centrifugal force, and, upon discharge from the bottom of the tubes, is deposited in hoppers for removal.

Any dust smaller than 20 microns can be handled efficiently by electro-static precipitators, which consist of a series of charged plates. As the air moves across the electric field, the particles become charged and are attracted to one of the plates; the plates are rapped, and the dust falls into hoppers placed below the precipitators.

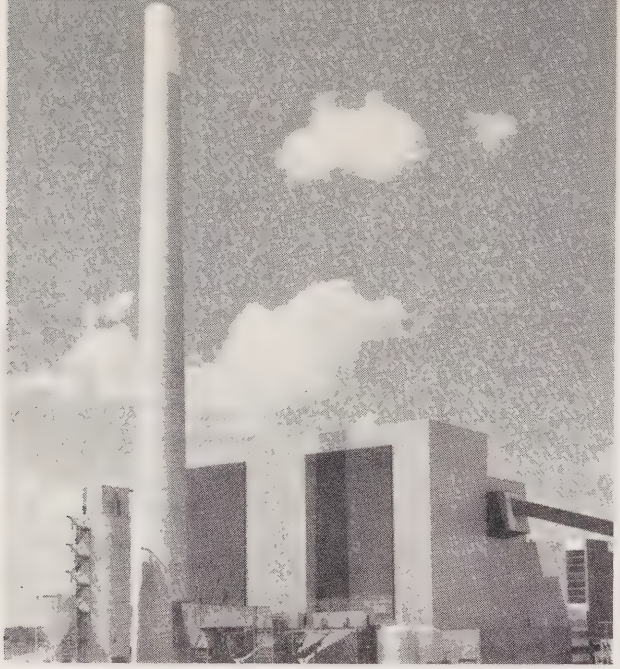
At Lakeview G.S., where both methods are used, more than 98 per cent of dust particles are removed before the combustion gases reach the chimneys.

"But the higher the percentage of efficiency, the more expensive it becomes," says Mr. Nelson. "Removing 100 per cent of the dust particles would be prohibitive from the point of view of costs.

High chimneys also help.

"The higher the stack that puts the dust into the atmosphere, the better the dispersal," Mr. Nelson said.

Particles as small as .01 microns can be carried as far as 100 miles away, while 100-micron particles would drop close to the stack. But, except for freak



*Towering almost 500 feet, the Lakeview G.S. chimney, above, is designed for maximum dispersal within cost limitations. More than 98 per cent of dust at this plant is removed before combustion gases reach the stack. Giant hoppers, below, collect dust from precipitators at another thermal station.*



cases, larger sizes are usually removed by the precipitators, and the particles that do get away are in the order of one micron or less.

Some of the fly ash collected from the hoppers is used as an addition to concrete for other Hydro projects underway in the province.

The major problem at Hydro's thermal stations is sulphur dioxide gas—there are up to two pounds of sulphur in every 100 pounds of coal, which, on burning, is changed to sulphur dioxide.

"It's extremely difficult to remove," Mr. Nelson explained. "We try to disperse it by building our stacks as high as possible, where the gases will dilute quickly and easily."

In the concentrations released from Hydro's thermal stations, sulphur dioxide is not dangerous, but, if not well dispersed, it has a high nuisance value. People can smell it, and arrive at the conclusion that it is dangerous.

"Our high stacks are playing their part well," Mr. Nelson continued, "and both the Richard L. Hearn and Lakeview plants are so situated that the prevailing north-west winds carry the stack effluence out over the Lake much of the time."

Height of the stacks is determined after much research by engineers and scientists.

"While dealing with the pollution problem at Lakeview, we were concerned about the height of the stacks which would produce the best dispersal at the most economical cost," Mr. Nelson said.

Wind studies carried out at the University of Toronto helped Hydro establish the correct height.

"They figured anywhere between 400 to 600 feet looked good. We decided on 493 feet. This was the most satisfactory, balancing cost with efficiency, and, as Lakeview is directly in a Malton airport flight path, we would have had to get special government approval to go any higher."

Air pollution is the fault and responsibility of everyone. Industry ranks third behind automobiles and incinerators in causing the problem, and is doing something to curb its contribution.

Governments and industry are well aware of the inherent dangers of air pollution. "We certainly are," says Mr. Nelson.

"We don't have to adopt an alarmist attitude," he added. "We won't all die off from air pollution, but everybody has to pitch in and do something about it unless we're prepared to put up with dirty cities and foul smells.

"A solution has to be found, and Ontario Hydro is doing its bit to keep its own house in order."

Not the least of the Commission's contributions to a smog-free Ontario is the promotion of electric heating. Combustibles such as oil and gas contribute substantially to air pollution.



# Building for Tomorrow

When the Oshawa Public Utilities Commission built new headquarters some 30 years ago, exterior design was a leading consideration.

Architect of the day, the late C. C. Stenhouse, neatly summarized the problem when he said:

"Fashions change in buildings as in all else, and to go to the extreme of any style is to run the risk of appearing antiquated in an amazingly short time. Only time can determine whether the setting of a building is in true harmony, but where good proportion and harmonious lines exist, they can never look out of place."

He called his 1931 creation "a restrained example of the modern trend in architecture," and time has born him out. Thanks to his foresight, the 30-year-old structure remains attractive in the midst of the architecture of the sixties.

Interior fittings are less impervious to the passage of time, however, and the Oshawa utility has recently incorporated the latest improvements in efficiency and appearance by completely renovating the executive and administrative offices.

On the ground floor the customers' service area was enlarged and rearranged. The counter length was doubled and the design updated. A modern cashier enclosure was built and installed to commission specifications, and a more spacious over-all effect was created by removing many of the partitions.

Much-needed additional space for the engineering department was obtained by eliminating unnecessary corridors on the second floor. Attractive new offices were also created on this level for the general manager and the assistant general manager, while the ladies' lounge was remodelled.

Lighting represents, perhaps, the most striking advancement in interior design during the last few decades, and the Oshawa utility has taken full advantage of these improvements. The customers' service area features a fluorescent louvered-type luminous ceiling which adds considerably to the appeal of this important section. Suspended fluorescent fixtures are the chief source of light elsewhere throughout the building.



*General Manager G. Shreve, top photo, points out some of the interior renovations to Chairman H. F. Baldwin. Photo of building exterior indicates virtues of restraint in designing for the future.*

As exemplified by these major renovations and improvements to its headquarters, the Oshawa P.U.C. has great faith in the future of the "Motor City"—the largest municipality on the Canadian side of the St. Lawrence Seaway between Toronto and Montreal. ■



Ontario Hydro's Eastern Region

comes up with some new wrinkles in

# UNDERGROUND DISTRIBUTION

*)ying direct burial technique,*
*'n Region crew, left, places primary*
*e in trench prepared by contractor.*
*)f this underground distribution*
*t in Ottawa area is estimated at*
*mes that of overhead system.*

UNDERGROUND distribution is looming larger and larger in the affairs of Ontario Hydro and municipal utilities across the province. And each project adds something to the vital store of knowledge needed to reduce costs and improve reliability.

A good example is the Teron Construction Company's new District of Qualicum residential subdivision—the first in the Ottawa area to feature a complete underground distribution system. Plans call for 55 homes in the initial stage of this 160 home project. It lies outside the city's western limits in the area served directly by Ontario Hydro.

W. L. Peddie, the Eastern Region's distribution engineer, who designed the system, is the first to admit that he profited from a careful study of earlier projects in various parts of the province. In doing so, he avoided pitfalls which have bedevilled others and came up with some useful innovations of his own.

The Teron project is thought to be the first underground system of its kind in Ontario to be installed at 8,000 volts. The direct burial technique was employed with a rubber-insulated, neoprene-jacketed concentric neutral cable carrying the primary service. This relatively new type of cable provides a built-in safety factor since the neutral portion of the cable, built in a layer around the perimeter, acts as a shield. And should the cable be severed by a shovel or other instrument, the contact between the conductor and grounded neutral would blow the line fuse.

Transformer enclosures were surface mounted rather than semi-buried because of the bulkier switching gear associated with the 8,000 volt system. The enclosures will accommodate transformers from 25 kva to 100 kva so that capacity will not pose a problem whatever the load growth.

Service conductors were run directly from the transformers to each back lot line, thus eliminating the need for exposed pedestals. Where homes were not ready for electrical service, polyethylene pipes were layed from the transformers to the lot lines. A pull-wire was enclosed and the ends sealed until such time as service may be required. In addition to eliminating future trenching, this procedure permits the installation of any type of service conductor, depending upon the actual requirements of the home.

Another interesting feature of the Teron development involves the meter installation and service con-



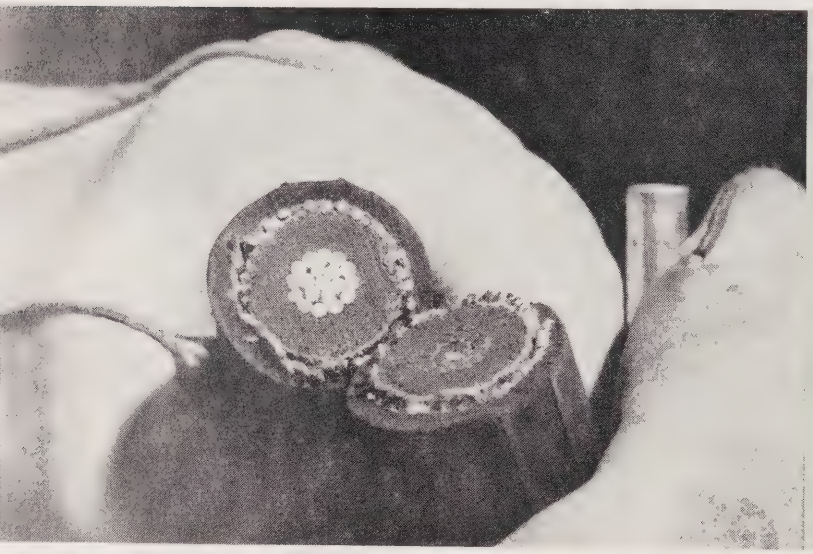
*Distribution Engineer W. L. Peddie inserts meter into special base designed by regional staff. It can be flush mounted with brick or stucco exterior wall. Exterior conduits between meter and service panel are eliminated.*

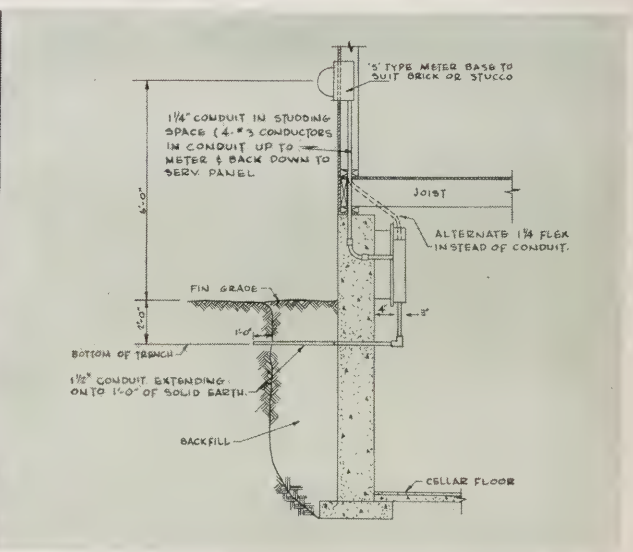
ductor entrance. A new type of meter base was used which can be flush mounted with either a brick or stucco exterior wall. Designed by the Eastern Region distribution staff, the base makes it possible to eliminate exterior conduits between the meter and the service entrance. Since the service conductor enters the house from the trench below ground level, only the meter itself is visible from outside.

Broken service caused by sinking backfill at the point where the conductor approaches the house is a common problem with underground distribution. Mr. Peddie believes he has solved it at Qualicum by extending 1½" steel conduit from solid earth through the foundation.

In line with Ontario Hydro policy, the difference in cost between an overhead and an underground system is fully paid by the subdivider. At the Qualicum development, the building contractor did the actual trenching, installed the gravel base and sand envelope, poured the concrete transformer pads and placed the backfill. Only the cable laying, engineering specifications and supervision were handled by Mr. Peddie's office.

*Cross-section of 8,000-volt primary cable, lower left, shows construction of type used at Qualicum development. Neutral, built around perimeter, provides built-in safety factor. Cable is rubber insulated and has neoprene jacket.*






*Details of the meter installation and service conductor entrance are shown in this diagram. Note steel conduit extending from solid earth through basement wall below ground level. This is expected to prevent broken service due to sinking backfill at point where conductor approaches the house.*

Commenting on the new underground system, Regional Manager A. M. Pedersen noted that subdividers and new home buyers alike have shown a keen interest in the results of placing all utility cables underground. He estimated that the cost of placing the electrical distribution underground at the Qualicum project would be about two and a half times the cost of a conventional rearlot overhead system. He said: "This is comparable to the costs experienced in similar developments with good soil conditions and easy access to work sites"—possible in new subdivisions as opposed to burying existing distribution systems in developed areas. ■

# along hydro lines



### Scope for wiring improvements Indicated by fire inspections

One of the best arguments in favor of wiring improvement finance plans is inherent in a recent report of the Toronto Fire Department.

Between May, 1958, and October, 1960, the department inspected 76,553 Toronto homes. The hazard listed most frequently (24,050 times) was overloaded fuse boxes. Other perils recorded included unsafe outlet box, switch box or wiring (5,389), and excessive or defective extension cord wiring (10,605).

Overfusing of electrical circuits was found in 31.4 per cent of the homes inspected.

### Electrical inspectors described As industry's "front-line men"

More than 170 members of the International Association of Electrical Inspectors, Canadian Section, gathered in Toronto recently to attend their eighth annual meeting.

Delegates were welcomed by W. Ross Strike, Q.C., Chairman of Ontario Hydro, who described the electrical inspector as the "front-line man," the first contact, in many cases, a person has with the electrical industry.

"Although the function of the electrical inspector is not primarily concerned with customer attitudes or satisfaction," he said, "I would like to suggest that he can often perform a valuable service for the utility or agency he is serving by taking time to determine the type of electrical service the customer wants and has a perfect right to expect. Often a friendly word of advice or explanation will clear up a serious misunderstanding or misconception on the part of the customer."

The three-day convention program included a symposium on outdoor applications of electric heat, a discussion of the safety aspects of electronic instruments for the petro-chemical industry, and a discussion of ground conductors versus double insulation.

Canadian wiring standards and codes were reviewed by W. G. Hoyle, National Research Council, and a panel discussion on the Canadian Electrical Code followed. Keith Bellamy, Ontario Hydro's chief electrical inspector, moderated a panel on the province's wiring regulations. ■

### Water diversion study proposed By Great Lakes Commission

The Great Lakes Commission voted recently for a resources survey that would indicate whether or not water now moving into Hudson Bay could be advantageously switched to the Great Lakes.

The resolution did not mention Hudson Bay specifically, but called for an examination of "additional inflows" that could include the great bay north of Ontario and Quebec. The resolution declared that the commission would initiate discussions with appropriate United States and Canadian officials.

The Great Lakes Commission is organized in Indiana, Michigan, Minnesota, New York, Pennsylvania, Wisconsin and Illinois, with Ohio expected to join.

Observers from Canada were present at the meeting when the resolution was passed. ■



## Getting the Message Across

The Renfrew Hydro-Electric Commission is taking full advantage of valuable truck space to get effective advertising messages across to the townsfolk. Its fleet of shiny service vehicles keeps the Live Better Electrically theme continually before the citizens of the Ottawa Valley town. The commission regards the vehicles as one of the cheapest and most effective advertising media available. ■

# press comment

A request by Ontario Hydro and the Power Authority of the State of New York for a study of the possibilities of increasing the diversion of Niagara River water for power production is now before the International Joint Commission. Recent statements picked up by the press should help allay the fears of any who might believe that additional water is being sought regardless of the affect on the beauty of the falls.

P.A.S.N.Y. Chairman Robert Moses was recently quoted in the **Niagara Falls (New York) Gazette** as saying:

. . . "With all regard for the vital importance of power to homes and industries, municipal and co-operative organizations and adjoining states, the beauty of the falls comes first."

He explained the dual nature of Niagara's development—to ensure its beauty and exploit its power.

. . . "As long as rain and snow fall above the Great Lakes, and the rivers flow by stages to the sea, the Niagara and St. Lawrence Frontiers will be affected with a memorable public purpose.

"It was precisely because beauty as such is not despised, that the task of preserving these frontiers was lifted above private, commercial exploitation and devolved upon us as trustees of our priceless, natural resources."

**The Toronto Globe and Mail** recently carried this report:

"The beauty of Niagara Falls will always be protected by the Ontario Government, Energy Resources Minister Robert Macaulay told the Legislature recently.

" . . . He said the demands for power production and the demands for viewing the falls are not incompatible. 'During the winter season the power requirements are highest, while relatively few persons are on hand to view the falls,' he said.

"He said millions of dollars have been spent in the Niagara area by the Ontario Government and surrounding municipalities developing its tourist potential. The beauty of the falls can be maintained only if there is sufficient water.

" 'Electrical energy, on the other hand, can be created elsewhere, and, therefore, the Government is determined to see that the relative interests in these matters are properly in balance,' Mr. Macaulay said.

"He said three factors now affect the levels of water above and below the falls: The natural flow of the river is lower than last year; the New York power authority is beginning to take its full share of the water permitted under the 1950 treaty; and it is dumping the water below the whirlpool at Queenston, instead of the Maid of the Mist pool."

Editorial comment in the November issue of **Electrical Digest** draws attention to the thermal-electrical achievements of Ontario Hydro in the 15 years since it was confronted with "the astonishing reality that, in a province where abundant hydraulic sites for power development had always been available, it had literally run 'dry.'

. . . "With the coming on line earlier this month of the first 300 mw unit at their giant new Lakeview plant, Ontario Hydro is to be congratulated. Created within their own design department, Lakeview will rank among the world's largest upon completion in the mid-1960s. As their initial project (thermal), Ontario Hydro's engineering division has established significant leadership, not merely because of the ultimate size of this station, but for the progressive concepts incorporated into Lakeview's design.

. . . "Ontario Hydro's thermal leadership, as embodied in Lakeview, is an achievement in which Canadian engineering can well take pride." ■

### Largest industrial steam plant Slated for Sarnia chemical firm

Dow Chemical of Canada Limited plans to install two 30,000-kilowatt steam turbine and generator sets at its Sarnia plant in 1963. The units are thought to be the largest steam turbines in industrial service in Canada.

Both are extraction, back pressure units designed to generate electricity from process steam. The turbines will be directly connected to 34,000-kva generators which are hydrogen-cooled at a gas pressure of 30 psi. ■

### Potential Canadian uranium production Far exceeds power plant requirements

The experimental N.P.D. nuclear-electric plant, soon to go critical, "will strike a blow for freedom," Robert W. Macaulay, First Vice-Chairman of Ontario Hydro told a recent meeting of the Canadian Institute of Mining and Metallurgy. He explained that the world was very anxious to see the plant's operation, because it uses natural uranium, of which most countries have some supply of their own.

Mr. Macaulay noted that Canada must always be an exporter of uranium because her reserves were thought to be the largest in the world, and her production potential was estimated at 16,000 tons per annum.

"If all the electricity presently being produced in Canada came from nuclear energy," Mr. Macaulay said, "it would mean an annual consumption of only 1,700 tons of uranium." ■



## Ontario Hydro Airlifts Poles

Ontario Hydro found a new use for one of its versatile helicopters recently when it was pressed into service for transporting and placing 12 poles for a rural power line extension.

The poles, each weighing some 800 pounds, were carried 12 miles—three over water—between Penetanguishene and Bone Island in Georgian Bay. Hardware was placed on each pole before the "whirly bird"—a Sikorsky S-55—carried it off. The machine hovered for about two minues while workmen on the ground secured the pole in position and the carrying line was detached.

Travelling at a mile a minute, the machine completed each round trip in about 30 minutes—a cost-saving proposition in difficult terrain. ■

### Douglas Point nuclear project Captures public imagination

More than 40,000 persons have visited the information centre at Canada's first full-scale nuclear-electric power project during 1961.

The Douglas Point information centre will be open Sundays throughout the winter between 1 p.m. and 4 p.m., at which time chief guide Ivan Lloyd will be on hand to answer questions and explain work progress. During the week, Mr. Lloyd will visit schools in the area bounded by the Bruce Peninsula, Goderich and Collingwood to talk about the project and the part it will play in the future supply of electricity.

The plant is reached by a paved road two miles north of Tiverton on Highway 21. ■

### Ontario Hydro to co-operate In emergency alarm studies

Ontario Hydro has been asked to co-operate with the Department of National Defence in studying the feasibility of installing an emergency alarm device system in the homes of electricity customers in an area of Southern Ontario.

The system, as tentatively envisaged, would involve the installation of 240-cycle signal generators at suitable locations in the power supply system in order to provide a signal capable of operating an alarm device on the customer's premises.

Among other things, the preliminary study is being undertaken to determine how the system should be designed and what its cost will be. ■

## municipal briefs

**Sudbury Hydro,** in conjunction with a local newspaper, has launched its third annual Christmas Home Sparkle Contest with every indication of a record entry list. The contest is designed to encourage homeowners to surpass their neighbours in outside decoration. Speaking of last year's contest, Mayor W. R. Edgar said he felt it had helped create "one of the best decorated towns anywhere."

**Sarnia H.E.C.** has decided to award combined study and tri-light lamps for the year's top students at the city's high schools. Manager C. S. Phelps recommended that the awards go to the top mechanical and commercial students in Grade 12, and to the top student in Grade 13. The lamps will be presented at the graduation ceremonies at the city's five secondary schools. They will be given in lieu of the commission's advertising in the school's year book.

**Welland Hydro** commissioners, at a recent meeting, questioned the legal fees of $7,600 for "legal tariffs and disbursements" in connection with the issuance of a million dollar debenture. A breakdown of the fees was requested, and it was suggested that the city might be wise to hire a full-time solicitor on a salary basis.

**Effective January 1,** 1962, membership on the Peterborough P.U.C. will be raised from three to five. A decision by council that the Mayor should be represented was responsible for the change. It thus became necessary to elect a fifth commissioner to avoid an even number. Commenting on the change, the Peterborough Examiner said: " . . . the growing complexity of the Commission's activities dictates that some of those elected be familiar with the technical side of the work. The valuable contribution made to the Commission this year by Richard Johnston, an

executive engineer at C.G.E., suggests that more men of his ability should be induced to stand for election."

**Stamford Township P.U.C.** has adjusted its commercial rate structure with a view to improving its competitive position. The new rate, effective January 1, 1962, will have the effect of increasing the bills of customers who make less than 140 hours' use of demand per month, and decreasing the bills of heavier users.

**Toronto Hydro** is vying for an electric heating prize that would, undoubtedly, be the largest in Canada. At stake is the heating contract for the much discussed City Hall, now under construction, and other buildings in the Phillip Square complex. A private concern would also like to supply the steam, from a coal-fired plant, and is making a strong bid for the contract. Writing recently on the subject in the Toronto Telegram, Andrew MacFarlane said: "The provision of miles of $200-a-foot heating pipes under the streets and service to anyone who wants it will appear to many people as an enterprise best conducted by a publicly-owned utility."

**Galt P.U.C.** will contact Emergency Measures Organization officials regarding safeguards against water supply contamination and Hydro disruption in the event of a nuclear attack. The utility decided against allocating personnel to the six-week survival course since it was more interested in men being trained in tasks related to utility preservation. It was agreed, at a recent meeting, to supply free power and distribution to automatic sirens the Federal Government intends to install.

**Ajax Hydro** has reduced its water heater rental rates by approximately 15 per cent. This represents a decrease from $1.75 to $1.50 per month for the 30- and 40-gallon tanks, and from $2.25 to $2 for the 63-gallon size.

**Kitchener P.U.C.** is considering hiring a public relations man whose duties would include lecturing on electrical and gas safety to groups such as the police, home and school organizations and industrial safety people. Commissioner Bruce Weber, who made the proposal, said the police had suggested such a man would be very helpful in advising people on how to act in an emergency.

**Grimsby Hydro** estimates its 1962 expenditures at $55,600, and intends to issue debentures for $45,000. Street lighting extensions and improvements will cost $15,000.

**Whitby Hydro** has plans ready for underground distribution installations in new areas, and has formed a committee to negotiate with subdividers. If there is a good demand for power in a new section, with electric heating and water heaters in general use, the commission expects it may be able to assume the extra cost represented by underground distribution.



## Etobicoke Stresses Public Relations

On the theory that good public relations begins at home, Information Officer Leo Mullen of Etobicoke Hydro holds regular discussions with those members of the Etobicoke staff whose work brings them in contact with customers.

Mr. Mullen's work is indicative of the emphasis the Etobicoke Commission places on creating a favorable public opinion, for Etobicoke is one of a very few municipal utilities in Ontario with a full-time information officer. During the few years he has been on the job, Leo has earned at least some of the credit for the excellent reputation his utility enjoys in a dynamic and fast growing industrial and residential community. ■

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**After a slow start,** underground distribution in North York is rapidly gaining momentum. In a special progress report to council, North York Hydro noted that underground construction was underway or completed in 10 areas, including one industrial and two commercial projects. Agreement had been reached for underground systems in six other areas, and more were in prospect.

**A lucky Oakville** resident has received a free hot water tank worth nearly $100 for being the 2,000th electric water heater customer of Oakville - Trafalgar Hydro. The unit was donated by the manufacturer and presented through the utility.

**Peterborough Hydro** is considering an eye-catching marker to warn unwary householders of buried electric cables on their property. Electricity to new homes in the Land Assembly area is being supplied by an underground system, and commissioners are probing the question of liability in the event that a customer should be injured by contacting a buried cable on his property. Legal advice obtained, although not final, indicates that it would take a court case to prove liability. Two warning methods are being considered, either a colorful metal plate at the service entrance, or a message stencilled on a panel box.

# OFF THE WIRES



It is impossible to work with electricity and not be impressed with its versatility. The multiplicity of off-beat uses which have come to our attention lately range from rock blasting to a device designed to simulate the love call of the female mosquito.

Electrical impulses which can crack through solid rock are being developed to replace blasting by explosives for certain types of tunnel projects. The method is expected to be available within four or five years, and should cut down damage claims from property owners, as well as complaints from householders.

The Russians are said to be using a device which feeds electric shocks to the brain and puts the user to sleep without the need for counting sheepniks. Not to be outdone, the U.S. military has a device that induces anesthesia electronically. It is used for surgical operations where complete anesthesia is required. The patient is brought back to stern reality with the flick of a switch, completely rested and without the after effects which sometimes accompany chemical anesthetics.

And Canadian Government scientists, by poking gently with sensitive electronic apparatus into the "ears" of mosquitoes, have determined that certain sounds appeal to the pesky insects. Further, they have produced an artificial sound so alluring to the male mosquitoes that they fly in swarms to its source—a death trap. Unfortunately, mosquito control with the use of sexy sounds is not expected to be practical.

More down to earth is a toe warmer now being marketed for use in office and other buildings with drafty floors. The 120-watt pad is made of laminated, tempered masonite.

Finally, we were intrigued with the ingenuity of a U.S. firm which has for sale an electric warming pad for cats and dogs. This hot seat for cool cats is equipped with thermostatic controls which, presumably, are preset by the user at the temperature which he finds most comfortable. Lest it induce dreams of lamp posts and fire hydrants, the pillow has a rubberized inner cover.

* * *

Regular readers will recall our article on Dutch elm disease which appeared in the June issue. It suggested that elm trees afflicted with this blight could be written off. Now comes word of a new discovery at the University of California which may save many of these fine shade trees. The discovery, called avenacin, is a plant-made antibiotic which, in the test tube at least, controlled 16 types of fungi, including the one causing Dutch elm disease. But other promising remedies have come to knot, and it's too early to go out on a limb and predict they have got to the root of the matter. They do seem to be barking up the right tree.

* * *

Last month, in these columns, we had something to say about the Canadian Highway Council's campaign to promote the use of seat belts in automobiles. Subsequent events indicate that the campaign is getting results. A meeting of the Seat Belt Committee of the Canadian Government Specifications Board was held recently to establish seat belt standards for government-used cars. The Saskatchewan Highway Safety Council has suggested to the government of that province steps which, if accepted, will lead to seat belts being regular equipment in every car licensed in Saskatchewan in 1964.

General Motors of Canada and Chrysler Corporation have announced that all 1962 cars operated by these companies will be equipped with seat belts. And, for the benefit of employees, seat belt sales at special prices have been carried out by organizations within several large concerns, including Ontario Hydro, DuPont of Canada Ltd., and Imperial Oil Ltd.

* * *

Every once in a while someone passing the neat suburban bungalow of Reg James of North York will stare for a moment at his front lawn and then drop in for a spot of tea and a bit of nostalgic gossip about old London Town. They recognize Mr. James as a



kindred spirit by his lawn lamp. Its flickering gas flame lit the way for generations of Londoners, and it is one of 230 he hopes to import for use on lawns and driveways.

The lamps, some of which are 150 years old, and have survived blitzes, are finally being scrapped in London. Mr. James already has several orders lined up and, like the one on his own lawn, he expects they will all be converted to the modern flameless fuel—electricity. ■




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